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Technology causes chaos in some spots but few problems in others

BY MARC L. BORDINI

The jury is still out on the performance of e-voting systems throughout the country in last week's midterm elections, according to officials and technical experts interviewed during and after the vote.

The prospect of widespread use of DREs, or direct recording electronic machines, most of which are touch-screen systems, had caused con-

siderable concern about the possibility of fraud, hacking or technical glitches.

But in the days after Tuesday's elections, it remained unclear to what degree those fears may have been realized.

There were scattered reports of technical or procedural problems that led to difficulties with either registration or voting in Colorado, Texas, Florida, Utah

E-voting, page 12

Protecting Data Becomes Top Security Priority for IT

Focus shifts from network defenses to sensitive info

Executives from companies and government agencies said here last week that after focusing for years on installing technologies such as firewalls and intrusion-detection systems to better secure their networks, they are rushing to provide stronger protections for the data in their systems.

"The data now matters above everything else," said John Ceraolo, director of information security, page 64

BY JAKUBAR VILAYAM
ISLANDO

Regulatory requirements and increasing consumer concerns about the exposure of personal information are making the addition of data-level security controls a top priority for IT managers, according to attendees at the Computer Security

The Lucky Ones

For most IT workers, pay raises have stalled out at around 3.1%, according to the nearly 15,000 who took part in Computerworld's 20th Annual Salary Survey. But for those with sought-after Web skills, employers are starting to loosen the purse strings.

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ONLINE EXCLUSIVE

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11.13.06



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Consortium for a Cure

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COMPUTERWORLD

The Lucky Ones

Pay raises for most IT workers ticked up just 3.6% again this year, according to Computerworld's 20th Annual Salary Survey. But some with the hottest Web skills earned above-average raises. Also, find select compensation figures broken out for male and female IT workers. One IT career expert says if the disparity isn't corrected soon, women might leave the field in droves.

Opinion: IT workers and corporate America recognize that they need each other but aren't certain that they're ready to trust again after being burned, says columnist Paul Chen. **PAGE 50**

Charts and Data Points: Find salary information for 30 IT job titles, plus data broken out by region and company size. Also, see how we conducted this year's survey. **PAGE 52**

Opinion: The frozen job market is starting to melt, says columnist Johanna Rothman. She offers advice for IT hiring managers starting to feel the heat. **PAGE 58**

ONLINE EXCLUSIVES

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Windows Vista A to Z

We've gathered Computerworld's best Vista coverage, from in-depth, hands-on reviews to stories about the hot issues surrounding the OS. Check back often for updates. @www.computerworld.com/software

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Making the PC Connection

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Consortium for a Cure

In the Technology section: The National Cancer Institute's digital oncology consortium reports its commitment to work to speed progress in cancer research and care. The grand computing project was named a Computerworld Honors Program award winner this year. **Page 36**

OPINIONS



Companies are gaining enough user buy-in for their business intelligence systems to make the technology a strategic asset.

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A health care provider signs a \$300 million contract with Alcatel for a converged IP network.

VMware gets more competition from Microsoft and open-source virtualization vendors — and some of its users are glad.

The top IT exec at an Australian TV network is negotiating follow-up to a shift of IT budgeting responsibility to the company's CEO.

Q&A: Bill Hill, a Microsoft exec, discusses the vendor's open-source plays and how critics can get an agreement to share technical info with Sun helped shape its recent deal with Novell.

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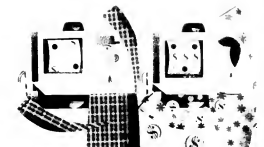
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32 **Bruce Howard** says you can't avoid getting ransom money from cybercriminals by deploying robust security systems.

Frank Hayes

notes that Kaiser Permanente had a CIO who led and project supervisors who looked like the future of IT. But they brought Kaiser what appear to be sweetheart deals, concessions, and bad publicity.



COMPUTERWORLD SALARY SURVEY

The Lucky Ones

Pay raises for most IT workers locked up just 3% again this year, according to Computerworld's 20th Annual Salary Survey. But some with the hottest Web skills showed above-average raises. Also, find select compensation figures broken out for male and female IT workers. One IT career expert says if the disparity isn't corrected soon women might leave the field in droves.

Opinion: IT workers and corporate America recognize that they need each other but aren't certain that they're ready to trust again after being burned, says columnist Paul Glavin.

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Opinion: The frozen job market is starting to melt, says columnist Johanna Rothman. She offers advice for IT hiring managers looking to keep the heat.

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Windows Vista A to Z

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INSIDE

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AT DEADLINE

CIO Resigns From Kaiser Health Plan

CIO David resigned last week as CIO at Kaiser Foundation Health Plan/Hospitals, Bruce Terhata, vice president and program director of HealthConnect, was named interim CIO. The company declined to say whether the resignation is related to a memo a Kaiser worker sent to all employees that criticized a \$4 billion electronic health records management system from Epic Systems Corp. that was rolled out in 2004.

Utah Man Pleads Guilty in Piracy Case

The operator of a Web site that sold software from several vendors has pleaded guilty to one count of criminal copyright infringement, said the U.S. Department of Justice. Timothy Knott of Salt Lake City will be sentenced Feb. 23 in a Virginia federal court. Knott faces five years in prison and a \$250,000 fine for providing subscriber access to software from Microsoft Corp., Symantec Corp. and others.

Microsoft to Release Windows Patches

Microsoft will release six groups of security patches tomorrow that fix flaws in the Windows operating system and the company's XML parser. Security experts said hackers have posted code showing how a flaw in the parser could be exploited to run unauthorized programs on a PC. Microsoft did not disclose whether this flaw will be fixed.

Motorola Buys Wireless Tech Firm

Motorola Inc. has agreed to acquire Geo Technology Inc., a maker of wireless messaging, handheld-security and data access products. Terms of the deal, expected to close early next year, were not disclosed. The acquired firm will be part of Motorola's mobile devices unit. Motorola uses Geo's mobile messaging technology on the Motorola Q smart phone.

BI Becoming Strategic Corporate Asset

IT must gain user buy-in, expand capabilities of tools, panel says

BY HEATHER HAVENSTERN
SAN FRANCISCO

BUSINESS intelligence technology is evolving from a tactical tool to a strategic asset as many companies look to it to help bolster enterprise operations, according to a panel of users at the Business Objects SA user conference here last week.

But making that shift requires user buy-in and an ability to offer BI capabilities to growing numbers of workers, the panel members agreed. Jim Young, director of the information services group at Allstate Insurance Co. in

Northbrook, Ill., said his company is looking to expand its use of BI to employees who work directly with customers.

About 33,000 Allstate workers already use BI tools from Business Objects to detect and analyze fraud, determine prices, process claims and manage the insurer's adjuster workforce, he said.

Now, Allstate is working to incorporate BI data into the business processes of employees who communicate with customers through telephone or online call centers or in person, Young said.

"We've got the data, [and] we need to mine that data and get it into the hands of people who can make some good decisions about how to cross-sell our products," he said. "Historically, we have done a great job

Business Objects Updates BI Suite

SAN FRANCISCO

BUSINESS OBJECTS unveiled an update to its business intelligence tool set at its user conference here last week.

The Business Objects 10 Release 2 Productivity Suite, slated to ship during the first half of next year, is designed to make it easier for business users to access analysis and reports needed to perform daily tasks. Pricing was not disclosed.

The suite will be available as an add-on to existing 10 versions, said John Schwarz, CEO of Business Objects. The updated version includes improved search capabilities, new visualization tools and a faster online analytical processing client, he added. The new search capabilities can be used to perform a keyword search to quickly retrieve relevant information from reports and dashboards, Schwarz said.

Hal Singel, data warehouse project manager at Pratt & Whitney Rocketdyne Inc. in Canoga Park, Calif., said the search capabilities could be a boon to the company's 300 Business Objects users, who often can't find data they are seeking.

Using the new search capability, he said, "you can ask a question, and no matter where it is—in a database, the servers or anywhere across the company—you can get it."

Rocketdyne, which manufactures rocket engines, uses Business Objects software to analyze cost schedules and to ensure that engines are delivered on schedule, Singel said.

Jeff Pelletier, senior IT manager at Cingular Wireless LLC in Atlanta, said users there are happy with the data dictionaries his company created for the current Business Objects version. "We're not comfortable with the new search features coming out," he said.

Dan Vessat, an analyst at market research company IDC, said the new search tool is aimed at allowing Business Objects users to find both BI content and external content using the BI tools. However, he noted that search results only provide a view into past performance "without support for evaluating alternative actions or weighing the impact of a decision."

—HEATHER HAVENSTERN

Corporate BI Use



of implementing BI somewhat tactically. Now, the opportunity is to start to bring together data from all the disparate parts of the company."

Allstate gained user buy-in for its new BI plan after putting together a "road show" to let key IT and business users know how it would work.

"We needed to make sure there weren't other initiatives going on in the company that would be derailed by our project," Young said. "We started to bring in key contacts from different development groups and negotiate timelines."

Douglas Chambers, administrator of the Office of IT Applications in the Georgia Department of Transportation in Atlanta, said 200 workers and managers at the agency are currently using Business Objects dashboards to monitor ongoing projects.

During the first part of 2007, the department will roll out the dashboards to an additional 2,500 users, he added.

"The dashboards allow upper management to drill down and see if a project is in trouble," Chambers said. "They can see exactly what is holding that project up. [The BI tools] have made the folks at the DOT much more aware of how... they directly affect those projects being delivered."

Jonathan Rothman, director of data management at Emergency Medical Associates in Livingston, N.J., said the

group practice of 250 emergency room physicians invested in BI tools for the Sept. 11, 2001, terrorist attacks.

The company uses the tools to identify potential disease outbreaks based on the symptoms of patients who come into hospital emergency rooms where members of the group practice. "Without BI, we couldn't have done it," Rothman said.

Nicholas Berg, senior manager of global business intelligence at Segate Technology LLC in Scotts Valley, Calif., said his company now has three separate global production versions of Business Objects software in place—including a system used at Master Card, prior to its acquisition by Segate in May.

The company plans to replace the separate versions and run the new Release 2 of Business Objects XI throughout the company sometime next year, he said.

Berg did suggest that Business Objects added guided analytics tools in a future version of the BI tool set. Such tools suggest solutions for problems that the BI software discovers—an important feature for companies such as Segate, whose user base includes power users and novices.

"We need tools [for] that user who doesn't know what the next step is... to be able to guide them through to some recommended actions," Berg said. ■



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Sun Set to Part With Java's Source Code

Users' reactions mixed: Some welcome access to code; others fear code forking

BY HEATHER HAPPELSTEIN

SUN MICROSYSTEMS Inc. this week is set to make significant chunks of the Java language freely available, making good on its promise in May to open the source code of the technology.

Sun CEO Jonathan Schwartz is slated to formally announce the availability of the code today at the company's headquarters in Santa Clara, Calif. Officials last week said that parts of the Java Platform Standard Edition (JSE) and Java Platform Micro Edition (JME) will be available under the same GNU General Public License used for the open-source Linux operating system and the MySQL database.

Sun said it will still offer commercial licenses for Java. Users had mixed reactions to the move. Some said they welcomed the chance for additional scrutiny of the source code. Others worried that the open-source shift could lead to the creation of incompatible versions of Java through the process known as code forking.

Alan Flint, systems, applications and programming manager at Richmond Wholesale, a food distributor based in Richmond, Calif., said Sun's decision may persuade his company to use the programming language for the first time.

"Open source is an area I am interested in pursuing... to have multiple options and not be locked into proprietary scenarios," he said. "Everybody in the world has to go to Microsoft because they are so pervasive, but sometimes you feel like you are painfully being forced to do something that is not in the best interest of the company."

Mayur Raichura, director of information services at The

Long & Foster Companies Inc. in Fairfax, Va., said Sun's open-source move persuaded the real estate firm to evaluate Java technology. Long & Foster doesn't use Java because of its cost and complexity, he said.

"With Java available as open source, we will definitely re-evaluate the Java option as a development platform," he said. Boscon's Department Store LLC won't be affected much right now by the move because the Reading, Pa.-based company uses other Java-based open-source tools like Red Hat Inc.'s JBoss applica-

tion server and BEA Systems Inc.'s JRockit Java virtual machine for development, said Joe Poole, manager of technical support. "The big impact will occur in the future, when Java specifications won't be written by Sun alone and the runtime environments should be more compatible" with non-Sun software, Poole said.

T.N. Subramaniam, director of technology at RouteOne LLC in Farmington Hills, Mich., said he was never among those Java users clamoring for Sun to open the source code. "I have concerns that this may fragment [Java]," he said. Subramaniam said that RouteOne—a joint venture of the finance arms of Daimler-



Chrysler AG, Ford Motor Co., General Motors Corp. and Toyota Motor Corp. — will likely remain a Java shop.

He noted that RouteOne is moving away from using Java in its service-oriented architecture in favor of native XML. John Muhlin, Sun's Java ME product marketing man-

ager, said the move to open source means developers can "influence the direction we're taking the platform."

The Java components that Sun is making available as open source this week are the Java Compiler and the Java HotSpot virtual machine, which makes up the Java Software Development Kit in JSE and the core implementation of JME found on most mobile handsets. Additional pieces of JSE and JME will be available under open-source licenses later this year and in the spring of 2007, Sun said.

Michael Gould, an analyst at Forrester Research Inc., noted that even though the code will be available as open source, Sun — not an independent organization — will control Java. "Not only will Sun still manage the open-source project... [but] it still has control of the Java Community Process," he said. "It is not a completely vendor-neutral effort."

Pa. Health System Moves to Simplify Network Sprawl

BY MATT HAMBLIN

The University of Pittsburgh Medical Center last week said it has signed a \$300 million contract with Alcatel to help it develop an IP network that supports voice, data and video communications via wired and wireless connections.

According to UPMC officials, the converged network will replace existing data networks that are based on equipment from Cisco Systems Inc. as well as myriad voice systems running on switches from four vendors.

Work on the convergence project is scheduled to start early next year, and Alcatel said it expects to finish deploying the new network within four years. But neither Alcatel nor the UPMC would say how long the contract will run for, describing it only as a multiyear deal.

The UPMC operates 19 hospitals and about 400 doctors offices and other outpatient sites, and it has 43,000 workers — making it the largest employer in western Penn-



sylvania. But Bill Hanna, the health care system's vice president of IT infrastructure, said the UPMC's sprawling organization has left it with a patchwork of more than 150 voice switches and 30 voice-mail systems, plus 25 call centers.

Consolidation Key

As part of the convergence project, UPMC officials hope to reduce the current setup to a single voice-mail system and one call center, Hanna said. He added that it isn't clear how many IP-based switches will have to be installed to support the new network. And although he predicted that the convergence work will result in lower networking costs,

he couldn't say by how much.

Hanna said the core network will be based on technologies usually reserved for telecommunications companies, including carrier-class routers and Dense Wave-length Division Multiplexing technology operating over fiber-optic cabling. "It will be very high performance — not what you'd typically see in an organization's network, especially in health care," he said.

Nancy Landman, the UPMC's vice president of business development and IT operations, said Alcatel beat out rival vendors such as Nortel Networks Corp. and Avaya Inc. partly because the health care system felt that Alcatel would act more as a long-term partner than as a traditional vendor.

For example, the deal calls for the UPMC and Alcatel to each invest \$25 million in a joint venture that will develop health care applications and

technologies. They said they initially will focus on products that enable health care providers, emergency response workers and other parties to share information during public-safety crises, such as a pandemic or terrorist attack.

Hanna said Alcatel also embraced the idea of supporting a hybrid network of digital, analog and IP-based phones, something Cisco couldn't do.

Brian Riggs, an analyst at Current Analysis Inc. in Sterling, Va., said the UPMC project evokes Paris-based Alcatel's big foothold in the U.S., where it has struggled to win customers for many years.

"The UPMC told me they didn't want to deal with multiple vendors," Riggs said. "But to have an organization that's ripping out Cisco and replacing it with Alcatel is a big deal. It's a lot of trust in Alcatel."

The UPMC has already installed several thousand wireless access points, and that amount is expected to grow to about 30,000 as part of the convergence project. ■

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The World According To Dennis

I want a backup for our backup
A contingency for our contingency
When the unexpected hits
when the storm comes,
we'll still be standing.

This is my world.

My world is a
dynamic network.

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Dynamic Networking from the new AT&T



BRIEFS

Microsoft Probes
ActiveX Defect

Microsoft Corp. is investigating reports of a vulnerability in a Windows ActiveX control that could allow an attacker to remotely control a computer. One security company rated the flaw critical, but Microsoft said it allowed only limited attacks. The vulnerability, which is not patched yet, affects Windows 2000 Service Pack 4, Windows XP Service Pack 2, Windows Server 2003 and Windows Server 2003 Service Pack 1.

Firefox 1.5 Support
To End April 24

Mozilla Corp. said it will stop installing security and stability fixes for the open-source Firefox 1.5 browser on April 24. The company recommended that users upgrade to Firefox 1.5.0.8 by that date. The new version includes software that will eventually allow Mozilla to push out Version 2 of the browser via Firefox's automatic update mechanism.

HP Charges InkTec
With Patent Breach

Heavitt-Pachard Co. has filed a complaint against the German subsidiary of InkTec Co. for violating HP's printer ink patents. The complaint, filed in a German court, alleges that InkTec's branded, six-year-old copyright could violate HP patents. HP said the alleged violations were found because of ongoing testing and enforcement efforts within the supplies unit of HP's Imaging and Printing group.

BEA Adds Bundled
SOA Offering

BEA Systems Inc. has announced its first package of Enterprise Integration Portfolio tools, which are designed to help users during different stages of their SOA deployments. The offering includes the existing WebLogic Integration 3.5 and AquaLogic Services Bus 2.6 products and the new AquaLogic Integrator tool. BEA did not disclose pricing for the package.

ON THE MARK

Documents Tell
Your Customers . . .

... what you think of them - which isn't much, it seems. Chris Stone, CEO of StreamServe Inc., laments that IT managers are missing an opportunity to help their companies improve customer relations every time invoices, lease documents and other papers are printed.



"It's amazing how much business relationship mail is junk mail," Stone says. Take a peek at most bills from big corporations, and you'll see that the paperwork is designed for the business and not its customers, he contends. "We're just a number on an invoice," Stone says. But he claims that his company's Persuasion software lets you design readable customer documents and customize them for people other than your CFO. You can even add marketing materials such as info about new cars for customers whose auto leases are expiring. A version of Persuasion that supports Web services and has a revised

user interface will ship next month, Stone says. It will also support applications built on top of SQL Server, DB2, SAP NetWeaver and IBM's FileNet technology.

Live video is
becoming a vital . . .

... business service. So says Andy Howard, director of marketing at Vbrick Systems Inc. He claims that companies are ratcheting up their use of video for applications such as monitoring offshore oil platforms or enabling CEOs to explain Page One scandals to their employees. To help, Vbrick is the first quarter plans to ship a video

The Vbrick appliances can digitize video feeds for WAN transmissions.

HOT TECHNOLOGY TRENDS, NEW PRODUCT
NEWS AND INDUSTRY BUZZ BY MARK HALL

encoder appliance with integrated management software from Media Publisher Inc. After it's been installed centrally and at remote locations, the appliance can digitize, compress and decompress video feeds for WAN transmissions. Media Publisher CEO Rod Sisco says massive video broadcasts of events to PCs will be possible. "We all see that having large-scale events is the golden chalice," he says. The goal is 100,000-plus seats. "That's pretty challenging," admits Howard - especially over a WAN.

The history of USB
ports on your . . .

... network can now be revealed. Later this week, SecureWave SA will release a security utility called Device Scanner to partners who sell its endpoint security tools. Although a visit from a value-added reseller (VAR) may not be the most charming part of your day, being able to run Device Scanner on your network may just win you over. Dee Liebenstein, SecureWave's U.S.-based director of product marketing, says the software can document the history of everything that has been connected to your Windows PCs and servers via USB ports as well as FireWire and wireless links. You'll learn who has been attaching what and how often, which could help you find potential security policy problems. Best of all, the utility is free - except for the time you have to spend with the VAR.

Get free reporting
tools for . . .

... IBM's live database. No VAR drop-ins are necessary with IntelliView Designer and Report Analyzer, a pair of free reporting tools developed by Synaptics Inc. for IBM's free DB2 Express-C

database. Better still, "there's no scripting, no coding," claims Synaptics CEO Madan Kumar. "Everything is drag and drop." According to Kumar, you can easily design graphical or data-driven reports with up to a million rows of data. Synaptics charges for training, a software development kit and a portal version of IntelliView. But if the tools are so easy to use, you may not need those extras. The software is in beta now and is scheduled for general release next month.

Logical and physical security meet . . .

... in the halls of government. As most federal agencies scramble to comply with a smart ID card directive issued by President Bush in 2004, vendors such as Tyco International Ltd. stand ready to help. Peter Borikinn, director of product management for access control at Tyco, says the company next month plans to ship Java-based personal identity verification (PIV) cards that meet the Federal Information Processing Standard (FIPS) 201. Agencies need to issue PIV cards containing digital



certificates and biometric data to all employees and contractors by September 2008 in order to secure access to IT systems and government buildings. Tyco's cards will do that, working with the company's Secure 9000 event management system, Borikinn says. The combined offering is due on Dec. 22, ahead of a January deadline for fielding PIV systems that meet the FIPS 201 specs. ■

The Highly Reliable Times

VOLUME 1 - ISSUE 1

 Windows Server 2003

LONDON STOCK EXCHANGE CHOOSES WINDOWS OVER LINUX FOR RELIABILITY

*Reliability Is Key in the
"World's Capital Market"*

By MICHAEL BETTENDORF



THE HEADQUARTERS OF THE LONDON STOCK EXCHANGE, LOCATED IN LONDON, ENGLAND. *Image courtesy of the London Stock Exchange.*

LONDON, Oct. 2006 — When an IT system must process 15 million real-time messages per day, with peaks at 2,000 messages per second, even one second of downtime counts. That's the pressure the London Stock Exchange faced when building Infocent, the Exchange's real-time stock-ticker information delivery system.

The solution had to have rock-solid reliability, nothing less. "Reliability is one of the key attributes of the Exchange in its technology systems. These systems have to work every day, 24/7, to make sure the markets are there," said CIO David Lester, who evaluated both Linux and Microsoft® Windows Server® 2003 for the Exchange's core tech-

nology systems. "We looked at a number of different platforms for our Technology Roadmap, and we lined up our business requirements with the capabilities of those platforms, and Windows Server was the clear choice."

In Lester's view, long-term reliability is a function of a solid relationship. "We wanted a deep partnership with an organization that could deliver the kind of mission-critical technology that we needed, and we felt Microsoft delivered just that."

For the full London Stock Exchange case study, plus other case studies and independent research findings on the reliability of Windows Server versus Linux, visit us at microsoft.com/getthefacts.

BREAKING NEWS: London Stock Exchange Achieves Record Reliability

David Lester, Chief Information Officer of the London Stock Exchange, shares his insights on the importance of reliability in the financial services industry.

BRIEFS

NTP Files Lawsuit Against Palm

NTP Inc. filed a patent infringement lawsuit against Palm Inc. The suit is similar to an earlier one that the patent-holding firm filed against Research In Motion Ltd. that nearly shut down RIM's BlackBerry service. The new lawsuit, filed in a Virginia federal court, alleges that Palm is using NTP technology in its mobile wireless e-mail devices. It seeks to stop Palm from selling and operating such products. In March, RIM agreed to pay \$612.5 million to settle NTP's patent claims.

Office '07 Released To Manufacturers

Microsoft Corp. has released the system code for Office 2007 to manufacturers. Countries in Canada and the U.S. can start downloading Office 2007 on Dec. 1, one day after the company plans to officially launch the updated suite along with Windows Vista and the Exchange Server 2007 communications software at an event in New York.

Duffield Firm Unveils First ERP Suite

Workday Inc., PeopleSoft co-founder Dave Duffield's latest venture, has unveiled the first of four planned on-demand ERP suites. The new Workday Human Capital Management is already deployed at two companies: multichannel customer service firm Kana Software Inc. and Biotech Inc., a biotechnology company. Workday plans to bring out on-demand suites of financial, resource and revenue management software next year.

HP Closes \$4.5B Mercury Acquisition

After extending its offer four times, Hewlett-Packard Co. has finally completed its \$4.5 billion purchase of Mercury Interactive Corp. Mercury is now a wholly owned HP subsidiary. HP will unveil its plans for Mercury's application management technologies at its Software Universe customer event in Denver next month.

Continued from page 1

E-voting

and Pennsylvania.

For example, some early voters in Florida's Broward and Miami-Dade counties reported difficulties getting the touch-screen systems to display the candidates they voted for. A spokeswoman for Florida Secretary of State Sue Cobb downplayed the reports of machine malfunctions, which she said were isolated and caused mostly by poll worker errors.

Holly Jacobson, co-director of Voter Action, a nonprofit election watchdog organization in Berkeley, Calif., contended that the early reports of few problems with e-voting machines was misleading.

"Although I heard reports that for the most part things went smoothly, that doesn't seem to be the experience of many voters — particularly in Maryland, Pennsylvania, Florida, Ohio, Colorado, San Diego County and elsewhere," she said.

"Reading through these reports really does give a tragic view of the voting experience for many," Jacobson added. For instance, in Ohio, 63 of Cuyahoga County's 573 polling places had machine problems that affected voters last week, according to Alan Melamed, a spokesman for the county's board of elections. At eight of those sites, voters had to use paper ballots because of faulty hardware.

No Big Deal

Joseph Demma, chief of staff for Utah Lt. Gov. Gary Herbert, whose office oversees elections in that state, said voters in Utah County encountered some problems with Diebold Election Systems TSX touch-screen systems during last week's election.

He said that delays in preparing encoders, which program specific ballots, caused some machines to be unavailable at the start of voting.

However, Demma said it was "no big deal," noting that people who couldn't vote on those machines used paper ballots until the machines were up and running.

Through last week, there were no reports of significant meltdowns or hacks that could tip a major race, according to officials and e-voting critics who closely watched races in several states.

Until all results are reported and certified, and the performance of e-voting hardware is more completely assessed, it's difficult to judge how well the DRE touch-screen systems held up, said several observers. Election Data Services Inc., a consulting firm in Washington, projected that as many as 38% of registered voters across the country could use the touch-screen systems to vote in the election.

"What we do know from [the election] is that the rollout of the new systems represented an enormous change for many officials and poll workers — in many cases, in a last-minute rush," said Justin Levitt, coun-

Overall, [the e-voting process] was a huge success in Utah. We are extremely pleased.

JOSEPH DEMMA

sel for the democracy program at the Brennan Center for Justice at the New York University School of Law.

Levitt said that while the number of affected machines appears to be low nationwide, the number of problems is still higher than it should be. "Many precincts were simply unprepared to deal with servicing the number of voters arriving at the polls," he said. "The user experience suffered as a result."

Positive Perspective

Despite a few glitches, top election officials in several states, including Texas, Maryland, Florida, Utah and Alaska, said after the election that the electronic voting gear in their states worked well.

"Overall, [the e-voting process] was a huge success in Utah," said Demma. "We are

extremely pleased."

In the days after the election, vendors of e-voting machines were upbeat about the performance of their products, and they maintained that voters are getting used to the technology.

"Our customers did a great job," said a spokeswoman for Sequoia Voting Systems Inc. The Oakland, Calif.-based maker of optical-scan and DRE machines claims a nationwide installed base of some 100,000 units. "As we predicted, things went smoother this November than they did in the primaries [earlier] this year because the officials, poll workers and voters have had more exposure to them," she said.

DRE critic and blogger Brad Friedman, founder of voter activist group Velvet Revolution,

Continued on page 14

It says he still doesn't know if e-voting, although the machines' software does not improve

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'Vote Flipping' Is Real, but Its Cause Is the Subject of Debate

Some blame machines; others say it's voter error

BY TODD R. WEISER

BEFORE AND during last week's midterm election, reports emerged that "vote flipping"—where a voter selects a candidate using e-voting hardware and the machine counts the vote for another candidate—had occurred in some states.

For example, voters in both Broward and nearby Miami-Dade County in Florida had complained of vote flipping during early voting, though local elections officials assured the public that no votes were changed.

Such problems have been reported in U.S. elections since 2004, when states started a push to use electronic voting machines. The goal of e-voting was to improve the accuracy of elections. Instead, for many voters, the change has prompted suspicions that votes aren't being correctly counted.

Despite e-voting critics' fears that vote flipping is caused by flaws in the machines, others say that such

problems can be caused by user error, machine calibration problems or other factors.

Stanford University computer science professor David L. Dill, who founded the non-profit Verified Voting Foundation and VerifiedVoting.org, both based in San Francisco, last week called for investigations to determine the cause of vote-flipping incidents.

"People have been way too quick to diagnose the problem," Dill said. "It could be a calibration problem with touch screens, but I'm not sure that anyone really knows because no one's looked at it. I want facts..." and all I've heard for two years is speculation."

Dill rejected one theory: that the problem is a conspiracy to defraud voters of their votes and give the election to the opposition. Once a voter picks a candidate, a review screen shows who they voted for. "It seems to me if you were trying to commit fraud, you wouldn't show the ballot to the voter," he said.

Dill said the problem could be caused by voter error, perhaps by accidentally touching a screen and erroneously making a selection. He suggested



The fundamental problem with any touch screen is that calibration matters, that angle of touch matters.

DAN WALLACH

that a panel of experts be formed to investigate the issue and determine how to fix any problems and get fixes to voting officials.

Contributing Factors

Ted Selker, co-director of the Voting Technology Project being conducted by the California Institute of Technology and MIT, has one explanation for such incidents: sloppy voters. Experiments by the researchers have found that voters incorrectly choose a candidate on their ballots one in 30 times, even under laboratory settings. "People are just sloppy and make mistakes," Selker said.

Though voters may believe such problems are caused by e-voting machines, Selker said the actual cause may be simply how voters use e-voting hardware. For example, he said

voters often try to drag a finger across a selection on touch screens that are designed for tapping. "Vote flipping is a user-interface problem, not a technical flaw, he said.

Machine calibration can be a problem because the units are sensitive to inputs based on a user's height and other factors, he said. Better machine designs and simpler voter-selection processes would help fix any problems, said Selker, an associate professor of media arts and sciences at MIT who has done extensive research on product design and human interfaces.

Avi Rubin, a professor of computer science at Johns Hopkins University in Baltimore and director of ACCURATE, an election research center, said the only way to be safe from vote flipping:

is to have paper records of every ballot cast. "My big worry is that we cannot ever say conclusively whether or not it happens" as a result of software glitches, tainted code, machine rigging or other tampering if there is no paper record, he said.

Paper records also allow recounts in the case of a disputed result. Rubin noted, adding that "without them, recounts are impossible."

Dan Wallach, an associate professor of computer science at Rice University and an associate director of ACCURATE, said vote flipping has been a recurrent problem in recent elections but shouldn't be blamed on electronic voting machines. He blamed the problem mostly on calibration issues.

"The fundamental problem with any touch screen is that calibration matters, angle of touch matters," Wallach said. Different people even use different parts of their fingers to touch the screens, he said. The only way to fix the problem, he suggested, is to increase the size of candidate selection buttons and place them farther apart on the screen, so "if you miss one button, you're not likely to touch another one."

A spokeswoman for e-voting machine vendor Sequoia Voting Systems Inc. said vote flipping is caused by human or procedural error, not by e-voting machines. "Sometimes the machines need to be calibrated or recalibrated," she said. "Machines in and of themselves do not flip votes."

E-voting machines are far more secure, accurate and auditable than the mechanical lever-operated voting machines and other systems they replaced, the spokeswoman contended. She called vote-flipping concerns a "conspiracy theory from activists and bloggers."

A spokesman at e-voting equipment vendor Diebold Election Systems also said that e-voting machines don't cause vote flipping. "It's not a problem," he said. "It doesn't exist. This again falls into the 'what if' scenario." ▽

Continued from page 12

E-voting

said that e-voting machine breakdowns forced the use of paper ballots in many locations across the U.S.

For instance, in Denver, problems with homegrown e-poll books, which control access to machines, forced voters to use paper ballots for a period in the morning. The problem prompted the Colorado Democratic Party to unsuccessfully seek a two-hour extension to polling hours in Denver District Court.

Meanwhile, Avi Rubin, an elections judge in Maryland's Baltimore County and a professor of computer science at Johns Hopkins University, said the performance of e-voting technology in his precinct had improved considerably since the September primary.

In last week's election, Rubin said, there was only one serious glitch in a single Diebold TS touch-screen voting machine in his precinct. In a blog on his Web site, Rubin noted that the e-poll books used with the Diebold machines by the precinct, which had caused considerable problems during the primary,

"worked flawlessly" in the general election.

Nevertheless, he said he remains opposed to the use of DREs because he believes that they still lack adequate security measures. (See "Critics Split on Whether to Abandon DREs," page 12.)

Despite the apparent lack of major problems last week, e-voting critics urged that the technology continue to be closely monitored.

This year's scrutiny by media outlets, which detailed potential problems, may have headed off hacking attempts that could have affected the results of a major race, said

Bruce Funk, the former elections director for Emery County, Utah, and an outspoken critic of touch-screen systems.

Funk called for improved audits of election results and said that paper ballots should be issued to people who request them.

"It's [the] 2008 [election] that worries me the most," he said, adding that the apparent lack of problems in last week's election "only lessens the public concern over the real security problem that still exists." ▽

Computerworld's Todd R. Weiser contributed to this story.

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VMware Users Open To More Competition

Rivals pushing virtualization vendor to be more aggressive, IT execs say

BY PATRICK THIBODEAU
LOS ANGELES

VMWARE'S DOMINANCE of the server virtualization market faces increasing threats from Microsoft Corp. and open-source rivals. Proof of that was in evidence last week at VMware Inc.'s own user conference, where competitors had booths and Microsoft's virtualization software was tucked into the backpicks handed out to attendees.

Although some users were surprised by VMware's display of openness to its rivals at VMworld 2006, the competition is needed, according to attendees such as David Freed, a senior systems analyst for the Los Angeles city government's finance department.

As a result of the competitive pressure, VMware is "getting much quicker at releasing upgrades," said Freed, who also thinks rival offerings are forcing VMware to be more

aggressive about dropping prices and adding features.

"Competition is doing a good thing for [users]," he said. VMworld drew about 7,000 attendees, and users and analysts at the conference agreed that VMware is well ahead of its competitors in offering x86 virtualization software with sophisticated functionality.

But that doesn't mean corporate IT managers are ignoring alternatives to the EMC Corp. subsidiary's products.

Robert Hoppes, an IT manager at Safeco Corp., spoke at VMworld about the Seattle-

Microsoft is going to want to compete, and so is XenSource. Right now, it doesn't look like they can.

DENNIS ROBINSON, TECHNICAL
INFRASTRUCTURE MANAGER, GENEX

based insurer's deployment of VMware technology for disaster recovery purposes within its IT operation, which includes about 1,600 servers.

"We like VMware. It's definitely meeting our needs right now," Hoppes added after his talk. But Hoppes added that he will remain "tool-agnostic" and continue to evaluate rival products against VMware's.

Nicholas Biggestall, a Unix systems administrator at the University of Missouri's main campus in Columbia, said he also likes VMware's software. But he's willing to consider XenSource Inc.'s open-source technology, which he said has annual support costs that are only about one-third as much as what VMware charges. "It's cheap enough that it's worth looking at," Biggestall said.

Genex Services Inc., a medical management firm in Wayne, Pa., is piloting VMware's tools in advance of a server consolidation project scheduled for next year. "Microsoft is going to want to compete, and so is XenSource," said Dennis Robin-

son, a technical infrastructure manager at Genex. "Right now, it doesn't look like they can." Nonetheless, Robinson said he plans to "do a little bit of a bake-off" between VMware and Microsoft before a final purchase decision is made.

Gartner Inc. analyst Carl Claunch said that VMware's future revenue growth will come from virtualization management and configuration tools — not from the runtime hypervisor that provides the underlying virtualization. VMware's approach, Claunch said, is to "build this momentum around virtualization — even if some of it's from Xen and Microsoft."

Virtual Server — and get control of configuration and management, the part where the money is in the enterprise."

Joy Haskins, a systems engineer at Holland America Line Inc. in Seattle, said the cruise line has a very good reason to consider virtualization. The amount of space for servers on board a ship is limited.

Holland America is testing VMware's software, Haskins said. But he also stopped by XenSource's booth last week. Asked about VMware's decision to allow its competitors to display their wares, Haskins grinned and said it was a good thing "because you can at least have other options." ■

Virtualization Turns Up Political Heat for IT and Business Users

LOS ANGELES

POLITICS was one of the hot topics at VMworld 2006, but the political hat had nothing to do with last week's elections. Instead, it revolved around the internal issues faced by users of virtualization software, which can undermine the balance of power within companies and their IT departments.

Virtualization can cause business users to lose ownership of servers that are consolidated into shared systems, making it difficult for IT managers to sell the technology internally. There also may be resistance among IT staffers if the idea is championed by the business side or a department affects storage and networking issues in addition to server management.

Political concerns such as those prompted Larry Spaight to attend a VMworld session devoted to some of the organizational challenges posed by virtualization.

Control of server resources is a touchy issue for business units that have had their own systems, said Spaight, a technical adviser on a VMware project at a petroleum company that he asked not be identified. "The various owners of these systems say, 'It's my system, and when it's virtualized, it's not my system anymore. It's running shared with everyone else,'" he said.

IT staffers may feel threatened if the push for virtualization comes from the business side and "is

not going through their approval process," said David Wagner, a technical lead for platform services at Georgia Pacific Corp. in Atlanta. "It's typically a bad thing when the executives agree to a technology and the technical people don't want it there."

Wagner and Gary Tierney, senior manager of technical services at Fair Isaac Corp. in Minneapolis, have each been running systems equipped with VMware's software for about three years.

Tierney said he prepared an elaborate presentation about the technology for employees at Fair Isaac. But he learned for himself that IT workers from different functional areas needed to be more tightly trained because of virtualization's far-reaching effects.

What often sells business managers on virtualization is the promise of reduced IT costs through hardware and systems management savings. Tierney, though, recommended that IT managers shouldn't make any decisions between that physical and virtual servers with end users.

"In the beginning, we were having some issues with people accepting virtualization and what it meant for them," Tierney said. Now, he said, IT staffers had it easier to just provide a server when users said one, without specifying whether it's an actual or virtual system.

—PATRICK THIBODEAU

EMC Broadens Its File Virtualization Capabilities

BY ANDREW FISHER

EMC Corp. today plans to unveil a new version of its Rainfinity file virtualization appliance with updated software that offers better integration with the company's Genrsa fixed-data storage array.

Version 7.0 of Rainfinity also features a new file management application, said Jack Norris, the company's director of virtualization marketing.

Bill Fleming, senior systems administrator at Johns Hopkins University's Applied Physics Laboratory in Baltimore, beta-tested the appliance and said the new file-management capabilities make it more robust. The lab is using

it in a project to migrate data from four-year-old Dell storage devices to EMC Clarion arrays, he said.

Fleming said the policy management feature in Rainfinity 7.0 is being used to automate the process of archiving the lab's 300 TB of data based on how recently information has been accessed by users.

An IT manager at a San Francisco-based retailer, who asked that he and his company not be named, used the previous version of Rainfinity to migrate 8 TB of data from two Network Appliance Inc. filers to an EMC Celerra IP storage array and called it "a lifesaver."

The manager said he's inter-

ested in Version 7.0 for its new policy features, which would allow the company to identify older data and port it to less-expensive storage. He said he's also interested in the new server's support for the Centera arrays installed at his firm.

Integrating Rainfinity with Centera makes "a ton of sense" because it creates a defined storage tier between primary and archived storage, said Tony Avers, an analyst at Enterprise Strategy Group Inc. Having tools that can move the data is also critical, he said.

The appliance is scheduled to ship today. Pricing starts at \$95,000; existing users can upgrade for \$12,000. ■

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Dual-Mode Capability Unites Wi-Fi, Cell Networks

BY MATT HAMBLIN

As wireless LANs continue to spread through corporate sites, several vendors are moving to offer dual-mode products that can support both Wi-Fi and extended cellular networks.

"We'd be quite interested in that capability — to have a Wi-Fi [handset] work as a cell phone," said John Tuman, director of network services at WakeMed Health & Hospitals in Raleigh, N.C.

The medical center already has about 650 SpectraLink voice handsets used by nurses over a Wi-Fi network from Aruba Wireless Networks Inc., along with about 500 separate cell phones. It would be valuable to have one phone that could work over both networks, mainly for the convenience of users, Tuman said.

WakeMed plans to buy Aruba software that's expected to be available early next year that can support dual-mode phones running between Wi-Fi and cellular networks. The updated software will run on a new Aruba 6000 Mobility Controller switch that will be installed later this month at the health care company, Tuman said.

Aruba last week unveiled a product road map that includes plans for adding support for multiple networks to its Mobile Voice Continuity software. The software is slated to be available in the first quarter of 2007, said Aruba founder Keerti Melkote.

Seeing Results

WakeMed has 600 access points spread throughout 2 million square feet of space in its facilities, along with nine Aruba Mobility Controller switches.

The medical center also wants to set up radio frequency identification technology throughout the medical center that will be supported by its existing Wi-Fi network, Tuman said.

Already, the voice-over-wireless capability helps nurses better maintain contact with their patients, according to Tuman. "It's working well," he said. "It gives nurses faster response to calls. Nurses like the flexibility

of not being tethered."

Meanwhile, Symbol Technologies Inc. released a new wireless switch that can support dual-mode phone hand-

sets with the addition of a software module, a spokesman said. The new RFS7000 RF switch is set to ship in 2007. Siemens Communications

Inc. plans to add similar capabilities to its HiPath product line in late 2007 or early 2008, a company spokesman said.

Paul DeBease, an analyst at Burton Group, said such dual-mode capabilities can let users

make cellular calls that are switched through a Wi-Fi network and then onto a wireline switch. Because of that, vendors call the dual-mode hand-over capability fixed-mobile convergence, he said. ■



APC Buy Puts More Power in Schneider's Hands

BY PATRICK THIBODEAU

The planned acquisition of American Power Conversion Corp. by Schneider Electric SA would combine two ven-

dors that now sell competing backup power devices for data centers, although Schneider has only a small share of that market in the U.S.

It's too soon to say whether customers of either company can expect product line consolidations as a result of the \$6.1 billion deal, according to

APC spokesman Aaron Davis. Nonetheless, Davis said APC officials have been reaching out to users since the deal's announcement two weeks ago, telling them that the West Kingston, R.I.-based company

will still be able to meet their needs. "One of our priorities is to make our transition to new ownership smooth and seamless for them," Davis said.

But Seth Mitchell, infrastructure team leader at Sharnberland Inc. in Little Canada, Minn., said he thinks the combination of Schneider and APC will be a difficult fit.

Mitchell uses APC's uninterruptible power supply products and said he has experience with the offerings of Schneider's MGE UPS Systems unit as well.

"I don't see a lot of positives in the short term," said Mitchell, whose company operates more than 100 furniture stores in 10 states. "It might look nice on a balance sheet. But getting two fierce competitors to integrate their highly contrasted ideologies to produce a cohesive set of products and services seems like a big task."

Potential Advantages

On the other hand, Vishal Sapru, an analyst at Frost & Sullivan Ltd. who focuses on the backup power market, said the acquisition should benefit APC's customers by giving them improved access to Schneider's line of UPS products.

The deal will give Schneider the top spot in the worldwide market for backup power devices, according to Sapru. He said that APC controls 28% of the market in North America, twice as much as its closest competitor, Eaton Corp.

France-based Schneider's MGE unit is stronger in Europe than it is in North America, where its market share is only between 2% and 3%, Sapru added.

Schneider said it expects to complete the all-cash acquisition in next year's first quarter. APC, which also sells cooling systems and other data center products, earned \$45.1 million on revenue of \$621.3 million in this year's third quarter.

But Schneider said that APC's profit margins have been hurt by the "significant investments" it has been making in large UPS systems. *

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GLOBAL DISPATCHES

An International IT News Digest

IT Exec to Quit Network After Shift in Budgeting

SYDNEY, AUSTRALIA

IT'S AN UNUSUAL IT, a television network operator and magazine publisher based here, is losing its top technology executive in the midst of a move to transfer IT budgeting responsibility to its chief financial officer. A spokesman for Seven Network confirmed last week that CEO Peter Lee is has taken over direct responsibility for the company's IT budget.

Meanwhile, Steven Longas, general manager of group IT services at Seven Network, confirmed that he will leave his job next month. Longas declined to discuss the ongoing changes to the company's IT organization.

His planned exit follows the resignation earlier this year of Peter Wharfed, who left his job as information systems manager after more than 20 years at Seven Network.

The company spokesman said IT operations will be managed by the head of its broadcast engineering unit. The spokesman downplayed the shift in budget responsibility, saying there are no IT restructuring or cost-cutting plans. "The word restructure is too grand a term," he said. "It has always been part of broadcast engineering."

In surveys of 254 IT pros conducted this year by the Australian chapter of IT, at computerworld sister publications only about one-third of the respondents said they reported directly to the CEO or the company's chief of IT.

■ JENNIFER ROSE
COMPUTERWORLD AUSTRALIA

India OKs Yahoo's Internet Phone Plans

BENGALURU, INDIA

YAHOO! last week said it has been given permission by India's national government to offer Internet telephony services to consumers in the country.

At the ITT also plans to introduce a set of Web-based services, including Internet telephony and instant messaging, in the Indian market, according

to a spokesman for AOL India. The spokesman said that will happen soon, but he wouldn't disclose a date for launching the services.

Yahoo is creating a new company, called Yahoo Internet Communications India to offer its telephony services, a spokesman said. The telephony operation will be separate from the company's existing Yahoo India subsidiary in Bangalore, which formerly was known as Bangalore.

Internet telephony has become a potentially large source of revenue because of the rapid growth of Web use in India. The Yahoo spokesman said.

■ JOHN RIBEIRO, IDG NEWS SERVICE

Veterans Agency Plans To Redesign Web Site

SYDNEY, AUSTRALIA

THE AUSTRALIAN Department of Veterans Affairs is seeking bids from vendors for a contract to redesign the agency's Web site in order to make information easier to find.

Bids are due by the end of this month, and work on the project is scheduled to begin in January or February, and be completed by April 30.

Margaret Millard, the project coordinator at the DVA, said the company that wins the contract will be responsible for designing a service-oriented architecture based on input it gathers from user focus groups.

"We want to redesign the architecture of the site because people can't find stuff," Millard said. "What we are doing now is long overdue. The Web site has been in need of redevelopment for several years, and we have finally got approval to do it."

According to the DVA's bid documents, the current Web site supports only a limited number of online transactions. The agency said in the bid papers that it is aiming to "significantly expand [the site's] e-business capability in the short-to-medium term."

The development of the Web site's content and graphics will continue to be done internally and isn't covered by the proposed contract, the DVA said.

■ MICHAEL CRAWFORD
COMPUTERWORLD AUSTRALIA

Samsung Unit Among Raided Chip Makers

SCHWABACH, GERMANY

AMUNG-SMITH CONFIRMS THAT Europe GmbH confirmed this month that it was one of several chip makers in Germany raided by the European Commission as part of an investigation of alleged price fixing.

The EC disclosed on Oct. 31 that it had conducted unannounced inspections at the offices of several static RAM manufacturers in Germany. However, it didn't identify the companies that were raided.

Such surprise inspections are part of the preliminary stages of price-fixing investigations, the EC said.

Samsung's offices in Schwabach, near Frankfurt am Main, were raided by EC officials on Oct. 11, according to a spokesman for the company.

"For the time being, we are fully cooperating with the investigation," the spokesman said. He added that Samsung hasn't been asked to turn over any specific documents to the investigators.

■ NANCY GORRING, IDG NEWS SERVICE

Motorola Protest Leads Court to Delay Contract

DELHI, INDIA

THE U.S. District Court has delayed the awarding of a mobile network equipment contract by telecom communications service provider Bharat Sanchar Nigam Ltd. in response to Motorola Inc.'s complaint that it was unfairly excluded from the bidding.

In its Nov. 3 decision, the court ordered BSNL not to award the contract before this Thursday, when the next hearing in the case is scheduled. Neither Motorola nor BSNL, which is owned by the Indian government, would comment about the ruling.

Motorola filed a lawsuit against New Delhi-based BSNL last month, after its bid for the contract for GSM and 3G cellular network equipment was disqualified on technical grounds. As part of the lawsuit, Motorola said it was seeking further clarification about the bidding process from BSNL.

EMI Fraxson Telephone Co. and Nokia Corp. were the low bidder for the contract. China-based telecommunications equipment maker ZTE Corp. also submitted a bid, but it was disqualified for technical reasons.

■ JOHN RIBEIRO, IDG NEWS SERVICE

Briefly Noted

said it was awarded

a seven-year contract worth \$207 million. Australian dollars (\$230 million U.S.) to continue providing engineering, operations and field maintenance services for Vodafone Group PLC's mobile networks in Australia. The deal extends a contract signed in 2004 under which Nokia manages Vodafone Australia's GSM, 3G and HSDPA networks.

■ JARREN PAUL
COMPUTERWORLD AUSTRALIA

and Micron Technology

Inc. last week announced plans to build a factory in Singapore to produce NAND flash memory devices. Construction on the plant will begin during the first half of next year and will cost "billions of dollars," the companies said. Intel and Boise, Idaho-based Micron plan to create a joint venture to run the new factory.

■ GUNDEL LEMAY
IDG NEWS SERVICE

and SAP AG

last week announced that their research organizations will work together on IT issues, focusing initially on hardware and software virtualization. The joint effort will include collaboration by workers at HP Labs in the U.K. and the U.S. and at SAP Research in Australia, Germany and Northern Ireland. The companies didn't provide any financial details or say how many staffers will take part.

■ CHINA MARTENS
IDG NEWS SERVICE

said the number

of subscribers to its 3G cellular telephone service in Japan hit 30 million last week 4, just over five years after the service was launched. Tokyo-based NTT DoCoMo added that it has had more 3G subscribers than 25 subscribers since mid-year.

■ MARTIN WILLIAMS
IDG NEWS SERVICE

last week

said it has opened a 100,000-square-foot facility in Beijing that will support the development of next-generation products for customers worldwide. The new facility, NetScout's third development center in China, also houses the headquarters of the Houston, Ontario-based vendor's Chinese operations.

Compiled by Mike Bucken



GLOBAL

IT Exec to Quit Network After Shift in Budgeting

SYDNEY, AUSTRALIA

SEVERN NETWORK LTD., a television network operator and magazine publisher based here, is losing its top technology executive in the midst of a move to transfer IT budgeting responsibility to its chief financial officer.

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COMPUTERWORLD AUSTRALIA

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■ JOHN RIBEIRO, IDG NEWS SERVICE

Compiled by Mike Bucken.

Briefly Noted

Mobile Corp. said it was awarded a seven-year contract worth \$257 million (Australian dollars (\$220 million U.S.)) to continue providing engineering, operations and field maintenance services for Telstra Group PLC's mobile network in Australia. The deal extends a contract signed in 2004 under which Mobile manages Telstra Australia's GSM, IS-95 and WAP/WCDMA networks.

■ DAPHNE PAULI
COMPUTERWORLD AUSTRALIA

Intel Corp. and Miran Technology Inc. last week announced plans to build a factory in Singapore to produce Xeon-based memory devices. Construction on the plant will begin during the first half of next year and will cost "tens of millions of dollars," the companies said. Intel and Miran, which have been partners in a joint venture to run the new factory, ■ SUMNER LEMON, IDG NEWS SERVICE

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IDG NEWS SERVICE

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Microsoft Takes Criticism of Sun Deal to Heart, Exec Says

Crafts Novell pact to avoid similar reaction, says Red Hat users not at risk

BY JEREMY HIRSH

Microsoft Corp. and Novell Inc. agreed to a joint venture that includes Novell's SE Linux and Microsoft's Windows operating system to help secure desktop PCs. They also agreed to a deal with SE Linux users from Novell to help them migrate to Windows. The deal, a product of quiet negotiations between Microsoft and Novell, is a sign of the company's growing openness to other vendors and its willingness to work with open-source software, which Microsoft has long been criticized for lacking substance. In an interview with *The New York Times* last week, Bill Hilf, chief manager for platform strategy at Microsoft, said the company's security approach is "evolving."

How does Microsoft view open source? Microsoft does not simply "sell" open source. We support it, says Hilf. We produce things people sell. When you build a Unix-based Linux operating system, you can't use the Red Hat logo on your software. But Hilf says that's not the problem with open source. "The problem with open source is that you didn't do it right," he says. "If you do it right, you can't use the Red Hat logo on your software." Hilf says that's not the problem with open source. "The problem with open source is that you didn't do it right," he says. "If you do it right, you can't use the Red Hat logo on your software."

What is Microsoft's motivation for the deal with Novell? Hilf says that's not the problem with open source. "The problem with open source is that you didn't do it right," he says. "If you do it right, you can't use the Red Hat logo on your software."

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Microsoft's goal is to establish a process for how to work with an open source community, about intellectual property. It is not as simple as you think it is. It is a process within the GPL, Linux, General Public License, and I do this in a way where we can both have the line between the community developer, the commercial developer, and the commercial developer who is using open source code.

Doing one of these cases,

doing one of these is a really hard, but possible. Doing all this is very, very hard because one can't trade the other.

Why did Microsoft agree not to sue SE Linux users and noncommercial open-source developers for patent infringement? We have the largest software patent portfolio in the world. With open source, we needed to have something in place where we knew that if our intellectual property was infringed upon, we had a framework in place to resolve that in an efficient way.

Isn't this a veiled threat to Red Hat users—that commercial de-

velopers are only legally protected by using SE Linux? There's no threat. There's a fundamental premise that we need to have a substantial amount of intellectual property in the operating system space.

Is Microsoft going to approach other open-source vendors? That door is open to anyone to do a similar deal.

Is there any significance to the timing of the Novell deal? We started on the general framework for this three years ago. The deal with Novell started about six months ago. There was not a lot of work we needed to do to understand

the GPL side of it and not to late the GPL. We are saying we are providing coverage for Novell's customers from a Microsoft intellectual property perspective. That allows us to work with the GPL because the GPL is very specific about licensing of patents.

People look back at Microsoft's 2004 technology development deal with Sun and wonder what it accomplished. Will we look back at the Novell deal in two years and wonder what really came out of it? We've gotten a lot of reaction about that. There's a lot of work that we do with Sun at an engineering level, but it just doesn't get reported. We made sure to put some important things in place that would be visible into this work, like a joint lab. Also, we are putting a substantial amount of co-marketing into this. We've learned from the Sun market reaction. ■

Eclipse Picks up Speed at Five-Year Mark

Open-source IDE gaining ground in corporate IT

BY HEATHER HAVENSTEIN

Five years ago this month, the Eclipse community was not a widely known IDE and others with more to go and offering tools for use on the open source. Eclipse integration of development environment. Since then, one of Eclipse has spread among corporate developers working in both the public and available Eclipse source code and packaged tools based on the technology from vendors such as IBM, BEA Systems Inc. and Borland Software Corp.

Markus Kohn, head of IDE at IBM, says that more than 100,000 developers worldwide are using Eclipse. The IDE has been named by the not-for-profit Eclipse Foundation in Ottawa since early 2003.

Compared to other com-

mercial products, Eclipse is much better in quality and features," said Barry Strassnick, CEO at Bench Provider, a San Francisco firm. "There is very little reason to spend money on commercial IDEs anymore. We have not enforced Eclipse's use for all developers, but it has become the de facto standard."

A Boost for Productivity

Based on surveys of interest developers, Strassnick said that Eclipse makes software development more efficient because it reports errors, as soon as code is typed and because Eclipse can better organize Java code without requiring that it be manually changed.

"The quality of the Java code produced using Eclipse is much better than code produced using other tools," Strassnick said.

John Mumaghan, president of Rand XI International LLC in West Hartford, Conn., said his company used Eclipse to build a commercial wireless



application that runs on handheld devices and monitors sensors for nerve agents, cyanide, radiation and other threats.

The application, called Cytra, was used by the Michigan National Guard to guard for possible biological, chemical or nuclear attacks at the 2002 Super Bowl in Detroit and at NATO Air bases in the state in June and August.

Philip Ruscovick, survey team leader at the Michigan National Guard's Self-Defense Team, said this price

of automating the monitoring effort with Cytra, soldiers at such events had to use radios to report sensor readings to a command center.

The unit first used the Cytra application at the Super Bowl in February, he said.

In the past, Strassnick said, the soldiers—who would likely be among the first to respond to a terrorist attack—would spend 30% to 40% of their time reporting results. "Cytra allows us to log all the readings that come back from the hot zone," he said. "It allows the soldiers to concentrate on their mission and not on reporting back readings from radiation meters."

Dan Johnson, director of software engineering at ITC Entertainment Television Inc. in Los Angeles, said that most developers at his company chose to use the Eclipse IDE.

"Eclipse early on integrated well with our source management system," he said, "where other tools were lagging behind in support." ■

Microsoft Takes Criticism of Sun Deal to Heart, Exec Says

Crafts Novell pact to avoid similar reaction; says Red Hat users not at risk

BY JENNIFER KANE

Two weeks ago, Microsoft Corp. and Novell Inc. agreed to undertake a joint effort to enable Novell's SUSE Linux and Microsoft's Windows operating system to better work together. They also agreed to indemnify SUSE Linux users from lawsuits for violations of Microsoft patents. The move prompted questions about Microsoft's long-term open-source plans and how this deal compares to an earlier deal with Sun Microsystems Inc., which has been criticized for lacking substance. In an interview with the IDG News Service last week, Bill Hall, general manager for the platform strategy at Microsoft, spoke about both deals and about how the company regards open-source software.

How does Microsoft view open source? Microsoft does not compete with open source. We compete with open-source products that people sell. When we did the deal with [Boson Inc.] open-source middleware company now owned by Red Hat, we found a few interesting stats. Half of their users were running on Windows. We also found that after we did the deal, we sold more Windows server licenses. That's just fundamental good business. So when we get into the competitive debate, [Boson] helped our Windows server business grow.

What is Microsoft's motivation for the deal with Novell? This is an intellectual property deal. There will be an overlap at some point between our intellectual property and open source that we have to resolve. We said let's put in place something that allows

us to A) establish a process for how we can work with an open-source company on our intellectual property; B) do it

in such a way that it can still work within the GPL [GNU General Public License] and C) do this in a way where we can clearly draw the line between the community developer, the noncommercial open-source community guy writing code and the commercial developer who is using open-source code.

Doing one of those is easy;

doing two of them is actually hard but possible. Doing all three is very, very hard because one can contradict the other.

BY HEATHER HAVENSTERN

Five years ago this month, the Eclipse consortium was unveiled by IBM and others with an eye toward offering tools based on the open-source Eclipse integrated development environment (IDE).

Since then, use of Eclipse has spread among corporate developers working with both the publicly available Eclipse source code and packaged tools based on the technology from vendors such as IBM, BEA Systems Inc. and Borland Software Corp.

Market research firm IDC estimates that more than 20% of software developers worldwide work in organizations that make significant use of Eclipse. The IDE has been managed by the not-for-profit Eclipse Foundation in Ottawa since early 2004.

"Compared to other com-

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Q&A

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Worldwide Eclipse Usage

Significant production use	73%
Minor production use	15%
Test use	7%
Minor research	3.2%
No activity at all	0.4%
Not known	0.1%

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Hurd Enough

THE STORY "Hurd: I Wish I Had Asked More Questions" [Computerworld.com, Sept. 28] evokes your wonder just why Mark Hurd still has his job. As CEO of HP, it was his job to oversee the work of others. The daily operations of HP were handled by several managers at the top level. All Hurd had to do was make sure they were doing their jobs correctly. What kind of CEO doesn't read all communications sent to him personally? If that's what CEOs do in the corporate world, then we have some very sick corporations.

Devin S. Bailey
Ft. Smith, Ark.,
msl@att.net

Speech Technology Is Not for Everyone

BEFORE YOU start congratulating yourselves about the coming age of voice-based applications [“Now We’re Talking,” Technology, Oct. 2], you need to remember that there will always be people whose voices are impeded because of a lisp, a stutter, a stroke or alcohol.

While the moribund can dismiss the alcoholic, there are others such as me who are afflicted with a stutter, and we will prefer a keyboard.

Thomas R. Kessler
Programmer/analyst,
Springfield, Ill.

Words Readers Love to Hate

WHEN IT comes to “Words We Love to Hate” [Management, Oct. 9], don’t forget “televaging” (using what you already own) and “human capital” (employees).

That last one just gives you a warm, fuzzy feeling and lets you know they care.

Liam Neuman
Systems administrator,
Cherokee, N.C.

HERE ARE a few more agile development projects over 50 can hit the bricks; alignment (by way, anyway); the highway; onboarding (scope, outsourcing is a disaster); synopog and synadimin (major and minor debts); team player (anyone who gets alignment).

Don Stiller
Lead software programmer,
Hobart Corp.,
Troy, Ohio

No Fuel Fool

REARDING YOUR Sept. 18 article “Data Centers Eye ‘Green’ Power” [News], just who are we kidding here? The fact is that hydrogen production requires energy to generate it, especially if the hydrogen/

oxygen source is from electrolysis of water, which requires copious quantities of electricity, most likely from fossil-fueled power plants. Thus, there is nothing “green” about fuel cells, other than the fact that there are no air emissions in the vicinity of use,

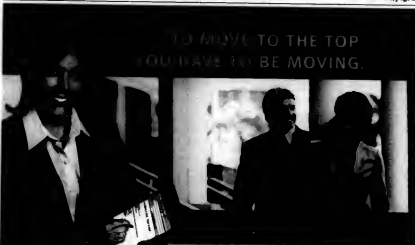
compared with generators.

Fuel cells are worthy of consideration in the role of a UPS, such as the flywheel technology that you mention near the end of the article. I read no mention of fuel cells only for UPS use, which is the only application that

makes any sense at all for this technology in a data center.

Tony Fawcett
Systems administrator,
Half Moon Bay, Calif.,
fawcett_t@hotmail.com

More Letters, page 27



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DON TENNANT

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I'm not so sure. I doubt that luck has much at all to do with how IT pros with hot skills are faring. The fact that the increases in salaries for network architects, Web developers and e-commerce directors outpaced the increases for other IT job categories isn't a matter of chance, and neither is finding oneself in one of those enviable positions.

Individuals in positions that garnered above-average salary increases this year recognize that you can't just sit on your existing skills and hope to get lucky. They'll tell you that you need to proactively research where the greatest demand lies and adjust your career path accordingly. That may or may not be worth the effort to you. If it's not, that's fine.

But don't fool yourself into thinking that the people in those positions simply had the good fortune of being in the right place at the right time. Almost one-third of directors of e-commerce, the biggest winners in our survey, reported that they had different job titles a year ago. Overseen as it may be, there's something to be said for the old Wayne Gretzky line about skating to where the puck is going to be, not to where it has been.

All of that said, the fact remains that chance is indeed a key factor in determining how much money you're likely to make as an IT professional. If you happen to have been born female, odds are you're making 12% less than you'd be making if you had been born male, according to this year's survey.



That finding is even more troubling than our discovery from last year's survey that women were making 8% less than their male counterparts. I subsequently wrote about the injustice of that, and I got an earful from indignant males who insisted that the figures don't tell the whole story. They argued that since the numbers aren't weighted to account for

factors such as family considerations that compel women to steer away from what would be career-enhancing relocations, dollar-for-dollar comparisons like this are misleading.

I agree that the gender wage-gap issue isn't black and white. But dismissing the disparity altogether as a reflection of the choices women

willingly make to balance their home and work lives is an argument of convenience. Regardless of how it's rationalized, a 12% gap is wholly inconsistent with the standards of fairness and equity that we should expect in the workplace. And the fact that the gap is wider this year than it was last year suggests that no appreciable effort is being made to address the inequality.

That needs to change, and there are ways to change it. There's a lot of buzz about equal pay audits in the U.K., where the percentage of females in the IT profession has declined from 27% in 1997 to 16% today, according to Intellect, a U.K. IT trade association. An Intellect survey published in May of this year found that 80% of women working in IT felt that an equal pay audit should be compulsory.

The IT sector needs to champion the cause of equal pay audits in the U.S., where the percentage of women in IT has also been dropping steadily over the past decade. If we're lucky, that effort might help stem the damaging loss of women from this profession. ■

Don Tennant



MICHAEL GARTENBERG

Vista's Pros And Cons

WHILE THE naysayers were still calling for Microsoft until to ship Windows Vista until sometime in the spring of 2007, Microsoft announced that it is definitively on track to deliver Vista this year to business users and in January 2007 for everyone else. What does this mean for you?

Well, Vista is not something that can be ignored, and every organization is going to have to come up with a policy for Vista deployments pretty soon for end users are just going to take matters into their own hands.

When Microsoft launched Windows 95, I estimated that, between Microsoft and its partners, about \$500 million would be spent on marketing. This time, it's likely to be well north of \$1 billion spent in an effort to get end users and IT professionals on board with the migration.

When I look at it, I see four major things that are compelling about Vista and four big issues with migration. Here's what to look forward to and what to watch out for.

What's Hot
Improved reliability and security. Windows XP was a good operating system, but let's face it — five years ago, no one foresaw the security and reliability problems that would come to plague PCs. Microsoft has learned a lot since the launch of XP, and it shows. Vista is much more stable and secure than any previous version of Windows.

Protected mode Internet Explorer. One of the biggest vulnerability points has been Microsoft's IE browser. While the just-released IE7 addresses a lot of security issues, IE7 running on Vista takes things to the next level. Running in protected mode, the browser is totally isolated from the rest of the operating system and actively



protects against malicious code. This alone is worth the price of admission.

Are Glass. Computers on TV never run XP; they run slick-looking user interfaces (but, alas, draw text on-screen as if it's moving at 300 baud, with annoying sound effects). It's mostly eye candy, but it's really nicely done eye candy. Vista's user interface is actually pretty slick and might even look good on CSI. Reverting to XP after using Vista with all of the Aero elements enabled is a chore. This is how computer should look in the 21st century.

Media centrality. Media is a first-class citizen in Vista. Tight integration with Windows Media Player and the Windows shell make it really easy to

browse, navigate, tag and play all the content that's important to you. Music, pictures and video all work just the way you think they should.

What's Not

Gradual UI changes. I love the user interface, but I have a lot invested in the old Windows experience, and some of the changes just make no sense to me. It also seems that, given the size of some of the targets you have to home in on with your cursor, Microsoft is hiring a lot of young drivers and high-level utilities will be the worst hit, but all critical applications will be tested carefully to see what works and what doesn't.

Performance. All this goodness comes at a price. While most features are enabled to some degree on stock

PCs, older machines just won't be up to snuff. If you want to run the latest and greatest with all UI features enabled, you're going to need an upgrade. Older laptops in particular are unlikely to be able to run Vista well with all the UI stuff turned on.

Compatibility. This is not a new problem, but Vista will confront business users for the first time in a long while with major backward-compatibility issues. In general, drivers and low-level utilities will be the worst hit, but all critical applications will be tested carefully to see what works and what doesn't.

Cost. There's more to the cost of migration than the price of the operating system. Installation, testing, hardware

and software upgrades have to be factored in. That means wholesale migrations are going to be costly.

Bottom Line

There's a lot to like in Vista. While most organizations will likely be best served by a phased migration over time, many users will be able to benefit immediately. Either way, Vista is on the short-term horizon, and it's best to start planning now, before the main consumer launch early in 2007. ■

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READERS' LETTERS

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When handed the IT mixes with the objective of implementing service improvement, I've often thought that, given the chance, I wouldn't start from here!

Robert Davis
Partner, KPMG, Wellington,
New Zealand, rddavis@kpmg.co.nz

Graylisting Spam

YOUR ARTICLE "Spam Fighters Losing Ground" (Computerworld.com, Sept. 21) issues an effective but understated spam-fighting technique: graylisting, or tap its. It increases the cost of sending spam without tying up the resources of the receiving mail server. It works better than filtering because it works on the sender behavior rather than the content. If every busy mail

server used graylisting to target spam senders, there would be a lot less junk to filter. Unfortunately for antivirus vendors, you can't generate cash flow from it - and so it will never be widely promoted.

Leslie Bernard
Professor, Durham College of
Applied Arts and Technology,
Oshawa, Ontario

I'm Surfing, but I'm At My Desk, Right?

WHILE THERE are certainly some abusers ("Employers Crack Down on Personal Net Use," Computerworld.com, Sept. 26), for the most part, it is simply that employers now have a method of measuring what used to happen in a non-technological manner. Where before people would walk to someone else's desk or use the phone to talk, they now use e-mail or IM. Before, they might peruse paper catalogs at work; now they use a Web store. Those who might have used a portable TV or radio now have streaming content.

Mike Redwood
Jersey City, N.J.

RESTRICTIONS on the use of the Web at work go the way of the restrictions on personal phone use that were common decades ago. Young people who have grown up with the Web will demand unrestricted access. Organizations need to focus on employee productivity, not enforcing an Orwellian environment.

Jan Evans
San Jose



Monitors, Multitasking

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multitasking capability

For instance, Photoshop opens the blank canvas on Screen 1, while Word opens on Screen 2. But I've been having Outlook on Screen 4, Firefox on Screen 5 and The Simpsons on Screen 6 - never, as I've noticed.

Project manager,
Lee Williams VAXCE, Montreal,
info@vaxce.com

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FRANK RAYES ("Control Charlie," Frankly Speaking, Sept. 25) has hit the nail directly on its logical little head concerning controlling the introduction of malware into corporate networks: When "Charlie" does something stupid, everyone else should experience an immediate loss of access, and Charlie's actions should be clearly and publicly identified as the cause, in a free market where everyone had equal

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At most companies, I would probably be forbidden from shutting down access when Charlie does something stupid and forbidden from disclosing that Charlie was the stupid sheep who caused the outage in the first place. Hayes' solution is a wonderful one that would nevertheless require skilled and dedicated political maneuvering. As always, there are no technology problems, only people problems.

Carl Weiss
Software developer,
Salt Lake City

Grandma Networks

THE ARTICLE "Two Reasons You Need a New Approach to Antivirus Security" (Computerworld.com, Aug. 24) quotes Jason Bradley as saying, "How does grandma know what the registry is?"

Watch it. This grandmother of three is a network specialist, and you'd better believe she knows what a registry is. Stop stereotyping.

Wend Wood
Network specialist,
Union-Bankcorp Central
Southwest, Endicott, N.Y.

COMPUTERWORLD welcomes comments from its readers. Letters will be edited for brevity and clarity. They should be addressed to Jamie Eckle, letters editor, Computerworld, PO Box 9171, Spence Street, Framingham, Mass. 01901. Fax: (508) 879-4843. E-mail: letters@computerworld.com. Include an address and phone number for immediate verification.

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Don Fennan is a writer at Chief of Compensation. Contact him at don.fennan@computerworld.com.

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Michael Gartenberg is vice president and research director for the Personal Technology & Access and Games Research groups at Jupiter Research in New York. Contact him at michael.gartenberg@jupiterresearch.com. His weblog and RSS feed are at http://blogs.jupiterresearch.com/michaelgartenberg.

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Robert Davis

Portland, KPMG, Wallingford, New Zealand, rdavis@kpmg.co.nz

Graylisting Spam

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Professor, Durham College of Applied Arts and Technology, Ontario, Ontario

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Mike Rothwell

Amory City, N.J.

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Ken Evans

San Jose



Mmm, Multiplexing

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screen-position memory

For instance, Photoshop opens the blank canvas on Screen 1 and the palettes on Screen 2, while Word opens on Screen 3. But imagine having Outlook on Screen 4, FrontPage on Screen 5 and The Simpsons on Screen 6 - mmm, six screens!

Martin Doucet

Project manager, Les Editions VALXIE, Montreal, info@valxie.com

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Software developer, Salt Lake City

Grandma Networks

THE ARTICLE "Fire Resisters

You Need a New Approach to Antivirus Security" (*Technology*, Aug. 26) quotes Jason Bradley as saying "How does grandma know what the registry is?"

Watch! This go-and-forget-of-it is a network specialist, and you'd better believe she knows what registry is. Stop identifying

Wick Wood

Network specialist, Union-Findout Central School District, Findout, N.Y.

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_INFRASTRUCTURE LOG

_DAY 28: These slow, inefficient boxes don't have enough power to run my high-end business apps. They don't have enough power to do anything except crash.

_Need sleep. Will try to dream that I am I.T. King of a planet that only produces really powerful servers.

_DAY 30: I've got it: the IBM System x™ with the AMD Opteron™ Processor. It has more power and more efficiency than I ever imagined in a standards-based server. IBM Xcelerated Memory Technology™ can let us access data up to 15 percent faster than other servers for maximized performance.* I can finally sleep in my own bed again.

_I have taken back control. I am Ned, benevolent I.T. King of this...uh, data center.



IBM.COM/TAKEBACKCONTROL/X

Consortium for a Cure

The National Cancer Institute developed an open-source, open-access information network to speed progress on cancer research and care. The grid computing project was named a *Computerworld* Honors Program award winner this year. **PAGE 36**

SECURITY MANAGER'S JOURNAL

Tackling Security for Mobile CRM

A new customer relationship management system means Mathias Thurman faces a whole new round of drawing up security requirements. **PAGE 34**



OPINION

How to Avoid Getting Ransom Notes

Bruce Hoard says you can thwart cyberextortionists by deploying robust security that can fend off threatened attacks. **PAGE 38**



Making THE PC Connection

New services such as **GoToMyPC** and **LogMeIn** are taking the hassles out of remote access to employee PCs. **By Sue Hildreth**

IKI MANYPH'S rolling his rock up the mountain over and over, IT support professionals deal with the same end-user support issues day after day. And when it comes

to supporting users at remote locations, those problems just seem to multiply. Far-flung users suffer from shaky Internet connections, misconfigured VPN clients, lost security tokens, forgotten passwords, virus-ravaged laptops and, of course, children who like to "modify Mom and Dad's settings."

With more employees than ever working away from the office, at home or on the road, supporting remote end users is consuming more and more precious IT resources.

To address this problem, a handful of companies — led by Citrix Online, a division of Citrix Systems Inc., and LogMeIn Inc. in Woburn, Mass. — are taking a different approach to remote access. It's one that doesn't use a virtual private network and may make life simpler for end users and for IT support staffers.

Under the new concept, the user's remote desktop or laptop isn't connected to corporate servers. Instead, the remote user is connected to his PC back at the office, with all of the same files, applications and desktop icons. This is accomplished mainly with a Web browser and screen-sharing technologies like those that have been used for remote support and online presentations. Even a PC in an airport kiosk or at a friend's house is sufficient to give a user full access to his office desktop.

For both busy remote users and overworked IT departments, the simplicity of these services can be a godsend.

Mississippi Baptist Health Systems Inc. in Jackson, Miss., for instance, had been providing remote users with VPN access to the hospital's systems. But it wasn't an ideal solution for either staffers or users. "The complexity of sup-

Continued on page 32

The Players

A sampling of vendors offering remote access services:

Citrix Online, a division of Citrix Systems Inc., Santa Barbara, Calif.

LogMeIn Inc., Woburn, Mass.

OL Communique Laboratory Inc., Menomonee Falls, Wis.

RealVNC Software Inc., Bedford, Mass.

ScreenTime Inc., Andover, Mass.

WebEx Communications Inc., San Jose, Calif.

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3D Communications Ltd. (UK)

LogiLink Software Inc.

Sentillion Inc.

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Continued on page 32

Making THE PC Connection

New services such as **GoToMyPC** and **LogMeIn** are taking the hassles out of remote access to employee PCs. **By Sue Hildreth**

LIKE SISYPHUS rolling his rock up the mountain over and over, IT support professionals deal with the same end-user support issues day after day. And when it comes

to supporting users at remote locations, those problems just seem to multiply. Far-flung users suffer from shaky Internet connections, misconfigured VPN clients, lost security tokens, forgotten passwords, virus-ravaged laptops and, of course, children who like to "modify" Mom and Dad's settings.



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Continued from page 30

porting a VPN is great, and many issues have to do with end-user training," says Michael Elong, director of network services.

So, three years ago, when the idea of subscribing to Citrix Online's GoToMyPC service came up, the hospital jumped at it. Now, more than 100 hospital health administrators and medical professionals use the service. Users log on to the GoToMyPC Web site, which then connects each individual's computer — either at the hospital or in a physician's office — and opens an encrypted session between the two.

"It's a familiar environment, and they don't have to launch anything on the client. It's very easy for them to use," says Long.

Unlike a VPN, which requires that software be loaded onto the client device and configured, remote desktop services just need software on the host PC. A thin applet is typically downloaded onto the client after the user logs into the service, and that applet communicates with the host desktop. Once logged on, the user has access to all applications available from the desktop — local ones as well as server-based applications and databases.

The Hurricane Factor

Ease of use and lower IT support costs aren't the only benefits driving this market. Some organizations also see remote desktop access services as a way to reduce the number of laptops floating around in all sensitive corporate data stored on their hard drives. Also, the services offer ready-to-go business continuity plans in case of a disaster or other emergency that prevents workers from getting to the office. "I call it the perfect storm of benefits, and I expect the marketplace for this to grow on the order of two to three times the rate of the PC market in general," says Dana Gardner, an analyst at Inter-ar Solutions LLC. A Gillick, N.H.-based research and consulting firm specializing in enterprise software.

"It's not a brand-new market, but it's started to take off in the past few years," says IDC analyst Stacy Naud. "Some companies no longer want employees to take laptops on the road for security reasons. And it's also being offered as a business continuity option."

For instance, the International Association for E-Robotics Management, a Dallas-based trade group with 3,500 members, turned to IT Communicate Laboratory Inc.'s iPrint InTouch service so staffers could work from home when Hurricane Rita threatened in 2005.

"After Katrina hit, everyone was scared. So when Rita started coming, we bought licenses so everybody could work from home for a day or two," says Chief Financial Officer Scott Stanton. "It's part of our disaster plan now."

The Johns Hopkins Bloomberg School of Public Health in Baltimore also found remote access to PCs helpful during a natural disaster — a snow and ice storm that left 30 inches of snow on the ground.

"We had one professor who needed to make grant deadlines, and she was able to do all her work remotely," says Ross McKenzie, director of IS at the school. "It would have been a support nightmare if we'd had to go around and set up VPNs at everyone's houses. This was a nice, clean solution."

For some organizations, the services help the IT department work with highly distributed operations. The IT staff at Meincke Car Care Centers Inc., based in Charlotte, N.C., uses the LogMeIn service to gain access to PCs at hundreds of automotive centers nationwide — without long drives to visit each location, according to technical support specialist Matt Langley.

At Kettering Medical Center Network in Dayton, Ohio, Sentillion Inc.'s iShare remote access software lets administrators tap into their hospital PCs.

Market Snapshot

IDC's August study of the relatively young market for remote access services concludes the following:

..... Citrix Online dominates the market, with a 50.5% share, because of its GoToMyPC product.

..... LogMeIn, the most popular vendor, has seen sales of its product grow and is rapidly gaining attention with its successful free version, LogMeIn Free.

..... Currently, remote access services are most popular with the consumer and small and medium-size business markets. But vendors are now targeting the corporate world as well.

..... The technology could become popular at companies heavy in letting employees travel with laptops that contain confidential information.

..... The services could be used for business continuity purposes, if disaster strikes, and employees can't make it into the office.

..... Two barriers to adoption: Many firms are slow to use VPNs, and vendors are reducing desktops at some companies.

Desktop IN YOUR Pocket

For many people, being mobile means using a handheld device, so remote access services such as LogMeIn, Citrix Online and iShare offer secure, easy-to-use desktop communication solutions. But how well does a tiny screen work for viewing a big desktop?

"The big challenge is how to pan around a PC desktop with a handheld," notes Gary Chen, an analyst at Yankee Group Research Inc. He says his double-handheld will be popular de-

vice for accessing desktops remotely, though they may be useful in certain situations, such as when the user's laptop isn't available.

Ross McKenzie, director of IS at the Johns Hopkins Bloomberg School of Public Health, agrees that it's not the best way to get to a desktop application but thinks it has great value for specific uses.

"There's certainly some applications I wouldn't want to run on a handheld, because you're accessing a 17-in. monitor with a 4-in. screen," he says. "But it can also be very useful. For instance, our IS people use them to check on server status — without having to go back to their desks — or to read a document remotely. It's a part of the overall tool bag."

— SUE HILDETH

Kettering Medical has 230 applications and 50 facilities in the Dayton area, so remote access is a major issue. Says Director of Technology Rob Burritt:

Good Grades for Security

Analysts and users cite few security concerns with the remote services. Most of the service providers offer several layers of security, including encryption, certificates and multiple passwords.

The connection from the remote device to the service, and from the service to the host desktop, is encrypted. And two or three passwords are normally required to gain access to a user's work applications — one password to log into the service, another to get to the PC and a third for access to the corporate network. Some services use certificates to verify their own servers' identities to guard against a hacker attempting to pose as a server to a remote user — a so-called man-in-the-middle attack.

Corporate versions of these services also provide administrative and security functions such as the ability to lock out remote printing or file transfers, one-time passwords for users who may be using public PCs, access restrictions and two-factor authentication.

"With the GoToMyPC management console, we can custom-configure security settings, force password changes, manage the log and see where access is coming from," says McKenzie.

Because many Johns Hopkins employees travel in countries without reliable Internet connections, GoToMyPC enables them to access desktop files and run statistical analysis on school computers from PCs in Internet cafes or anywhere else. In addition, McKenzie says, many faculty members work from home using the service, and the information systems department relies on it to keep tabs on the status of university servers.

The only real security issue that Johns Hopkins has encountered involves desktop shortcuts. An employee discovered that his roommate had clicked on a GoToMyPC shortcut and was able to access the employee's work PC. So McKenzie had the shortcut feature disabled for all users. (Citrix Online notes that while it's possible to create a shortcut to an account, it isn't possible to create one that will open an encrypted session to the host PC.)

One advantage of the remote services is that they negate the chance of a malware infection. Viruses on a home PC can't infect the corporate computers. Likewise, a corporate virus can't get onto the remote client unless the user saves an infected file to disk.

All in all, the real selling points for services like LogMeIn and iPrint InTouch are price and convenience. According to IDC's Sadeh, fees typically range from \$30 to \$70 per PC per month, possibly less for large volume deals. And it is substantially more convenient for employees, who get access to everything on their work PCs, and for IT workers, who don't have to handhold users to set up VPNs and configure e-mail clients.

Long says that support calls from remote users plummeted 80% to 90% after Mississippi Baptist switched to the Citrix Online service. That's a lot of IT manpower that's now available for other projects, he notes.

"It pays for itself in resource time, if nothing else," Long says. "With the VPN, we sometimes have had to spend several hours with end users initially getting it working. With this, the support and IT resource costs are so much lower."

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Continued from page 30
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Market Snapshot

GoToMyPC, Citrix Online, LogMeIn, iVhere, and other remote access services. They don't peak and usually tapering after a while.

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COGNOS
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Tackling Security For Mobile CRM

A new application rollout means a whole new round of drawing up requirements for our security manager. By Mathias Thurman

ANOTHER enterprise application made its way onto my radar screen this past week, and I've been busy putting together a plan to address security for it.

To speak in acronyms, I'm moving from PLM to CRM. About two months ago, I finished up my security architecture review and requirements for a product lifecycle management application. The PLM project is still in the development phase, and I continue to contribute to it from time to time to ensure that my requirements are being built into the application. My real work with PLM will start in the validation phase, when I'll conduct an audit to ensure that my requirements have been properly addressed. But for the moment, I'm not doing much on the PLM project and can concentrate on CRM.

CRM stands for customer relationship management. Our main goal with this system is to improve relationships with our customers by streamlining our service department's interactions with them. Specifically, we want to use CRM to let our service engineers accept work assignments, account for time, track parts, communicate with co-workers and perform other aspects of their jobs.

The service technicians have been using a homegrown tool to accomplish these activities, but it isn't very intuitive or efficient. Built years ago, when our company was small, it was never meant to be an enterprise-class tool. Among its problems is that techni-

cians have to establish a virtual private network session with headquarters to access the application portal. That's a serious drawback, since many of our technicians work in fabrication plants operated by our customers, whose policies prohibit them from bringing in laptops. In addition, many of these plants don't have Internet access.

So our CRM project will include a slight twist that we are calling "mobility." Besides deploying a CRM back-end application, we will include the ability for certain portions of the CRM application to run on Research In Motion Ltd.'s BlackBerry phones.

This will be new territory for us and will require a whole new set of security controls. We currently don't equip any users with BlackBerry devices.

The first set of controls is related to the phones themselves. BlackBerry allows you to configure several security-related features. You can establish various lengths for passwords, incorporate time-outs, lock phones after a certain number of unsuccessful attempts to access them, and enable data encryption. You can also remotely disable a phone if it's lost or stolen.

Of course, each of these security controls has a hit on

usability and productivity. For example, if I mandate a nine-character alphanumeric password with uppercase, lowercase and special characters and a five-minute time-out, users will complain, since inputting a password on a BlackBerry device isn't easy.

Server Requirements

I will also establish a general set of requirements for the BlackBerry Enterprise Server. For example, I will require that the server be placed on a separate virtual LAN and mandate certain configurations on the router and switch to prevent denial-of-service attacks. I'll also make sure that sufficient logging is included, which will assist with incident response should we detect any unauthorized use or cases of intellectual property theft.

To allow the BlackBerry phones to run the CRM application and talk to our CRM back-end servers, we are using technology from Jersey City, N.J.-based Antenna Software Inc., which provides mobile applications specifically designed for the service industry. I've reviewed Antenna's white papers and am impressed with the security of its offering. But to be safe, once the project team has created design documentation, I will review it to ensure that there are no gaps.

I'm the first to admit when I don't have expertise in a technology, and security for mobile devices is certainly one of those. In order to fully address security aspects of the mobility phase of the CRM project, I will hire a contractor to help me assess the infrastructure and devise a set of policies, standards and guidelines for the phones, the BlackBerry Enterprise Server, the Antenna infrastructure and employees' use of the phones. Mobility is

probably the riskiest aspect of this infrastructure, since more and more enterprise applications will surely be accessible via the phones. For example, we've already deployed IP telephony and enabled unified messaging. The more applications that are accessible on the BlackBerry, the more intellectual property and sensitive data will be exposed.

I will also need to focus efforts on the back-end CRM infrastructure. When I conducted my assessment of the PLM project several months ago, my deliverable was a set of security requirements. I like to create fairly generic requirements so that the documentation and spreadsheets for future applications can be built from them. This practice saves time, since most enterprise applications have similar security requirements. For example, the ability to check certain types of documents in and out may apply to many applications.

There are other things to look into. Encryption of data in transit and at rest will need to be evaluated. I will want the ability to monitor certain types of activity, such as log-ins and log-outs. We'll need to set up authorizations for privileged access and set parameters for exception reporting. Then there are the prudent practices of setting up role-based access control and creating separate VLANs for Web, application and database services.

This project is still in its infancy, so I can't be sure yet that I've covered all the bases. But mobility will extend the CRM application beyond our internal and DMZ environments, so getting it right is essential. If this isn't architected properly, the ramifications of a stolen BlackBerry phone could be very embarrassing. ▀

WHAT DO YOU THINK?

This week's journal is written by a real security manager "Mathias Thurman," whose name and employer have been disguised for obvious reasons. Contact him at mathias.thurman@yaho.com, or join the discussion in our security blog: computerworld.com/blog/security. To find a complete archive of our Security Manager's Journal, go online to computerworld.com/bsjarchive.

SECURITY LOG

**SECURITY
MANAGER'S
JOURNAL**

Security

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Add Skeptic™. Our unique, predictive, self-perpetuating technology. It learns from each of the billions of emails, instant messages and web pages it scans every day and reacts instantly to any danger.

Take away complexity and the need to update any software. (Our services are delivered via the Internet outside your network and stop threats long before they reach you.)

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Consortium For a Cure

The power of grid computing propels cancer research to a new level. By Mary K. Pratt



COMPUTERWORLD HONORS SHOWCASE

National Cancer Institute's Cancer Biomedical Informatics Grid

ORGANIZATION: The National Cancer Institute (NCI), part of the National Institutes of Health, is the U.S. government's principal agency for cancer research and training.

PROJECT CHAMPIONS: Dr. John Niederhuber, former chairman of the National Cancer Advisory Board and now director of the NCI, former director Dr. Andrew von Eschenbach, and deputy director Anna Barker.

STAFF: About 180 NCI staffers, along with about 620 people from various institutions outside the NCI, work on caBIG.

NOTE: The NCI has invested \$20 million annually over the past three years. Participants share tools and data, which reduces duplicative efforts and speeds up research breakthroughs.

SCIENTISTS AND DOCTORS fighting cancer have a powerful new weapon. It's not an innovative drug or breakthrough gene therapy. Rather, it's an expansive technology initiative that links them together in their efforts to find a cure. The Cancer Biomedical Informatics Grid, or caBIG, is a voluntary, open-source, open-access network that allows institutions, teams and individual researchers in the U.S. to share tools, standards, data, applications and technologies.

The National Cancer Institute developed caBIG with one goal in mind: to speed progress on cancer research and cure. "I really see it as the next generation of research," says David Fenstermacher, director of biomedical informatics at the Abramson Cancer Center of the University of Pennsylvania.

Computerworld named the NCI a 2006 Honors Program recipient in the science category for its development of caBIG.

"The community was really very ready for it," says Joel Saltz, professor and chairman of biomedical informatics at the Arthur G. James Cancer Hospital and Richard J. Solove Research Institute, part of Ohio State University.

The research community has been developing grid technologies and super-

computer consortia to support its work, Saltz says. And as grid technology has matured, so has researchers' willingness to share data and tools, particularly through the Human Genome Project.

The Need

Despite the evolution in those areas, researchers were still fairly isolated within their institutions when the NCI announced the caBIG initiative in 2003, project leaders say.

"We were generating this large knowledge base, and the only way we were getting that knowledge out was writing papers," says Rakesh Nagarajan, an assistant professor in the department of pathology and immunology at Washington University in St. Louis.

And even though researchers and institutions at the time were sharing some data sets, the process was cumbersome. Researchers would e-mail files or burn data onto CDs or DVDs, which would then be mailed. Moreover, the data's format varied from institution to institution, which required recipients to convert information into formats compatible with their own systems.

"The idea [with caBIG] was that you should be able to re-analyze data in new and novel ways and integrate

other data," Nagarajan says.

This was the backdrop as the NCI launched caBIG in February 2004, working with some 50 NCI-designated cancer centers and more than 30 other organizations to build this infrastructure.

The Challenge

While the initiative enjoyed an enthusiastic response from the research community, the program — like all technology projects — had to contend with both systems and cultural challenges.

First, caBIG had to link institutions spread across 24 states and individuals working on various systems, including legacy systems. In different locales that were generating data in different formats using varying semantics for the same abstract concepts.

"What we saw there was tremendous [diversity] in need and systems. And we were covering the entire landscape, from discovery research to clinical trials to the intermediary steps," says Ken Buetow, the NCI's associate director for bioinformatics and IT, and director of the NCI Center for Bioinformatics, which directs caBIG.

Program leaders cooperatively developed the architecture, software infrastructure and standards for sharing data. They created interoperability that allows for machine-to-machine exchanges, the compatibility of tools and the accurate exchange of complex concepts through the use of standardized definitions and semantics.

The Technology

CaBIG leverages existing software standards and open platforms, such as the Globus Toolkit, wherever possible in the development of this suite of interoperable biomedical informatics tools and shared vocabularies and data elements.

The program also uses specific tools such as caDSR (Cancer Data Standards Repository), EVS (Enterprise Vocabulary System) and caGrid to allow geographically dispersed researchers and informatics to query data using desktop tools.

Today, more than 800 people contribute to caBIG by developing applications, infrastructure, standards, policy documents and related resources. CaBIG also links cancer centers in 32 states. Moreover, NCI has developed a close collaboration with the U.K.'s National Cancer Research Institute, which plans to hire someone to work exclusively with caBIG to ensure coordination and technical compatibility.

The NCI has spent \$20 million annually for the past three years to develop caBIG, with much of this federal mon-

ey going into labor costs and software-related services, according to Buetow and Peter A. Covitz, chief operating officer at the NCI Center for Bioinformatics. Participating institutions also contribute, usually through in-kind resources or sweat equity.

Moving forward, Buetow and Covitz say the goal is to expand not only the tools and data available on caBIG, but also the number of people using it. Program leaders say they also want to improve the ease of using and making submissions to caBIG and deliver more user interfaces in the upcoming year.

"The belief is that caBIG will tie together resources and, if nothing else, will accelerate breakthroughs in cancer research," Covitz says. ■

Pratt is a Computerworld contributing writer in Waltham, Mass. Contact her at marykpratt@verizon.net.

Photo: National Cancer Institute
www.nationalcancer.gov



IBM.

_INFRASTRUCTURE LOG

_DAY 59: The infrastructure is growing out of control. Nothing's being used to capacity. It costs a ton to manage, both in time and resources. All we do is react to problems. I told Gil I'm tired of spending my days putting out fires. He said he'd pitch in.

_Gil brought in a fire hose. Everyone is sopping wet, and the data center is an electrified wading pool. We've got to find something better than H₂O.

BRIEFS

**Standard Releases
WealthStation 2.0**

■ Standard Data Systems Inc. has unveiled WealthStation 2.0, which adds unified managed account features to the wealth management software for financial services firms and financial advisers. The software can consolidate assets from multiple accounts and institutions into one central planning and decision-making environment, according to Standard. The Wayne, Pa.-based vendor says that WealthStation 2.0, with its financial planning, asset allocation and CRM modules enabled, is priced at about \$1,000 per user per year; volume discounts are available.

**Inter-Tel Unveils
SIP-based Switch**

■ Inter-Tel Inc. last week announced the Inter-Tel 7000 communications switch, which is based on Session Initiation Protocol standards. The product is designed to help integrate SIP-based applications and devices into a business network and can support up to 2,500 users, the Tempe, Ariz.-based vendor says. Pricing starts at \$500 per user. The switch is available now.

**Spectra Logic
Upgrades Applianc**

■ Data storage vendor Spectra Logic Corp. last week announced the Spectra D500 network storage appliance. The new product will incorporate Spectra Logic's BlueCloud storage management software to make it easier to manage the backup and archiving disk system. The D500 includes the same BlueCloud interface that thousands of Spectra Logic T-Series customers have used for years, making it compatible with all major backup software applications, the vendor says. The D500, which can be configured with 2TB, 4TB or 8TB of raw storage capacity, starts at \$95,000 for 4TB of storage and will be available in December, according to the Boulder, Colo.-based vendor.

BRUCE HOARD

How to Avoid Getting Ransom Notes

I SUPPOSE it shouldn't come as any surprise that cybercriminals are demanding ransom — in some cases up to several million dollars — and threatening to launch massive, external targeted attacks if we don't pay up. No, it isn't surprising, but it's depressing. What started out as hacking has turned into something that threatens the very survival of innocent businesses.

It's a lose-lose scenario for the victims. Their first choice is refusing to pay the ransom and risking crippling attacks launched by multiple virus-infected computers located around the world. This choice entails contacting law enforcement authorities and hoping that the authorities can find and arrest the threatening party.

For chance. And this option could also lead to a firestorm of negative publicity that can be just as fatal as the global virus attack.

The second choice isn't much more alluring. It involves paying off the extorters and hoping they'll go away and not come back. But what are the chances of them not coming back when they have already succeeded once? At this point, the victim organization is in even worse shape than it was before paying the first round of ransom, because it has compromised its position by acceding to the illegal demands.

Admittedly, this worst-case scenario is experienced by relatively few companies (just how few we'll never know, since many of them understandably keep a tight lid on such occurrences), but it points to a larger problem faced by businesses everywhere. Even in the troubled and terrorist-plagued world that we live in, security remains a second-rate concern in many tight-



fisted organizations.

It's not cheap to set up a security infrastructure. According to a couple of experts I've spoken with, the estimated costs for protecting a company with 15,000 employees run anywhere from \$100,000 to \$1,000,000 — not cheap, indeed. But as the same experts are quick to ask, how much does it cost to recover from a large-scale disaster, whether it be criminal extortion or a Category 5 hurricane?

Not that it's necessary to go full-blown in order to implement significant security measures. However, very few companies go beyond the level of developing simple access lists, and very few are currently encrypting their internal disk systems, even though it's internal abuses and attacks, not external ones, that cause the most damage.

So, how to get started? The first thing to do is figure out whether you want to run your security shop in-house or farm it out to a managed services provider.

Typically, the largest corporations with the most internal IT talent are the most likely to retain this key function along with control of their business-critical data, while midsize firms are increasingly seeing the value of outsourcing. It takes a big leap of faith to entrust your most important data to a third-party firm, but more and

more businesses are doing it.

The next step is developing a security plan based on a comprehensive review and classification of data. Where is it? Which data is confidential? What policies are in place to protect it? And how easy is it to monitor and enforce them? The best way to protect your most sensitive data may be to wall it off in data repositories or on servers that are inaccessible to all but the most trusted authorized personnel.

Which brings up the sticky issue of access. In some organizations, IT infrastructures have grown so out of control for so long that nobody really knows who has access and at what levels, which opens up the disturbing possibility of sysadmins reading executive-level e-mails. Even in tight-security IT shops, the fact is that sysadmins require high-level access to do their jobs.

Once a security plan is hammered out and access control becomes more clear-cut, it comes down to a matter of trust. You put your best people in place and trust them to manage your systems — it's as simple as that.

So, how will this kind of security plan protect potential cyberextortion victims? For starters, it enables these firms to make it known to the world that they're spared no effort in developing the strongest possible security infrastructure.

Hackers are like a lot of people: They take the path of least resistance. So if they know some company has turned itself into an airtight security fortress, they're less likely to engage it through hostile acts.

Aside from that, cutting-edge security technology is tough to circumvent. It only makes sense that the more judiciously you deploy it, the safer you'll be. ■

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A high-contrast, black and white photograph of a person in a wheelchair. The person is positioned in the upper right quadrant, mostly obscured by deep shadows. Only their legs, feet in sneakers, and the wheels of the wheelchair are clearly visible against the dark background. The overall mood is somber and contemplative.

being the person the
meeting can't start
without.

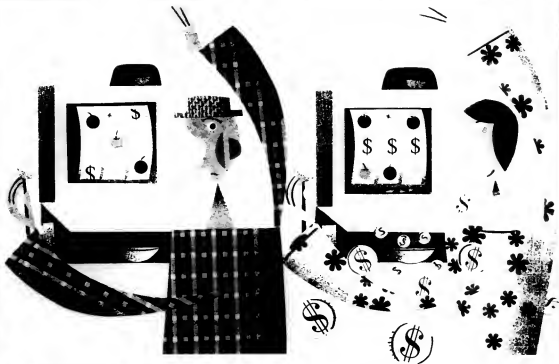


RICHARD LILLASH

COMPUTERWORLD

The Lucky Ones

**HOT SKILLS GOT THE BIGGEST PAY BOUNCES
IN 2006, AS COMPANIES PREPARED TO FIGHT
FOR KEY TALENT.** By Stacy Collett



COMPUTERWORLD
**SALARY
SURVEY**

**HOT SKILLS GOT THE BIGGEST PAY BOUNCES
IN 2006, AS COMPANIES PREPARED TO FIGHT
FOR KEY TALENT.** By Stacy Collett

The Lucky Ones

M

[illegible]**ONLINE EXCLUSIVE**

Is your salary on par with what your peers are making? Use our Smart Salary Tool to compare your pay with that of IT workers in similar jobs around the country. Our 2006 survey reports on the salaries of nearly 15,000 IT professionals: www.computerworld.com/06/salaries

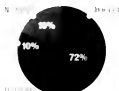
111

2006 AVERAGE CHANGE IN
SALARY, ACROSS THE BOARD

SALARY INCREASES BY JOB LEVEL

SENIOR MANAGERS	3.5%
MIDDLE MANAGERS	3%
IT STAFFERS	3%

**HOW HAS YOUR 2006
BASE SALARY CHANGED
FROM ONE YEAR AGO?**



AVERAGE INCREASE $\frac{f(b) - f(a)}{b - a}$
 AVERAGE DECREASE $\frac{f(a) - f(b)}{a - b}$

TITLES THAT SAW HIGHER THAN-AVERAGE GAINS IN TOTAL COMPENSATION

Director/vice president of e-commerce/e-business	100%
Network architect	100%
Web developer	100%
CIO	100%
Storage architect/engineer/administrator	100%

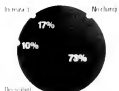
220

2006 AVERAGE CHANGE IN
BONUS, ACROSS THE BOARD

BONUS INCREASES BY JOB LEVEL

SENIOR MANAGERS	6.1%
MIDDLE MANAGERS	2.1%
IT STAFFERS	0.5%

HOW HAS YOUR EXPECTED 2006 BONUS CHANGED FROM ONE YEAR AGO?



AVERAGE INCREASE	32%
AVERAGE DECREASE	38%

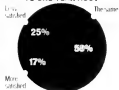
**TITLES THAT SAW
LOWER-THAN-AVERAGE GAINS
IN TOTAL COMPENSATION**

E-commerce specialist	1.8%
E-commerce manager	1.0%
Technician	1.0%
Network manager	4
Technical trainer	1.0%

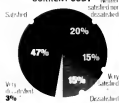
HOW SATISFIED ARE YOU TODAY WITH YOUR TOTAL COMPENSATION PACKAGE?



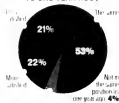
HOW DOES YOUR LEVEL OF SATISFACTION COMPARE TO ONE YEAR AGO?



OVERALL, HOW SATISFIED ARE YOU WITH YOUR CURRENT JOB?



HOW DOES YOUR LEVEL OF SATISFACTION COMPARE TO ONE YEAR AGO?



By the Numbers

MIKE YORK has 15 good reasons to be happy with his job. As a network architect at Experian Information Solutions Inc.'s data center in Allen, Texas, York saw his salary jump 5% this year, plus another 10% as the credit reporting company raised his pay to equal that of his counterparts at the California headquarters. "In Texas, I'm the only network architect" for the company, York says of his specialized skills.

He's not the only one with reason to smile. While IT workers across the board saw their pay increase an average of 3.1% again this year, a few lucky ones with the hottest skills saw above-average raises, according to Computerworld's 20th Annual Salary Survey, which studied the compensation and bonuses of 14,740 IT workers. Network architects the York received average pay increases of 5.3%. Web developers, Internet managers and directors of e-commerce saw jumps of 4% or more.

Compensation watchdogs say these IT rock stars have catapulted to popularity because of consumer demand. "The dominant business model is now Web-based. That's what it's all about," says David Foote, CEO and chief research officer at Foote Partners LLC in New Canaan, Conn. "Customers are dictating the way they want to interact across the network with the vendors. They're willing to define the relationship in part by how secure it is and how easy it is to do business with them. If I'm purchasing from a Web site and the site is too slow, I'm off of it."

On the e-business side, the need to comply with the Sarbanes-Oxley Act and other regulations drove demand for Web skills to the max before the compliance deadlines last spring. Now these same companies have returned

Continued on page 44

SALARIES

3.1%

2006 AVERAGE CHANGE IN SALARY, ACROSS THE BOARD

SALARY INCREASES BY JOB LEVEL

SENIOR MANAGERS **3.5%**

BASE: 2,305

MIDDLE MANAGERS **3%**

BASE: 4,378

IT STAFFERS **3%**

BASE: 8,056

HOW HAS YOUR 2006 BASE SALARY CHANGED FROM ONE YEAR AGO?



AVERAGE INCREASE **6%**

AVERAGE DECREASE **7%**

BONUSES

3.2%

2006 AVERAGE CHANGE IN BONUS, ACROSS THE BOARD

BONUS INCREASES BY JOB LEVEL

SENIOR MANAGERS **6.1%**

BASE: 2,305

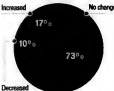
MIDDLE MANAGERS **2.1%**

BASE: 4,378

IT STAFFERS **0.5%**

BASE: 8,056

HOW HAS YOUR EXPECTED 2006 BONUS CHANGED FROM ONE YEAR AGO?



AVERAGE INCREASE **32%**

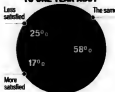
AVERAGE DECREASE **38%**

SATISFACTION

HOW SATISFIED ARE YOU TODAY WITH YOUR TOTAL COMPENSATION PACKAGE?



HOW DOES YOUR LEVEL OF SATISFACTION COMPARE TO ONE YEAR AGO?



OVERALL, HOW SATISFIED ARE YOU WITH YOUR CURRENT JOB?



HOW DOES YOUR LEVEL OF SATISFACTION COMPARE TO ONE YEAR AGO?



BIGGEST WINNERS

TITLES THAT SAW HIGHER-THAN-AVERAGE GAINS IN TOTAL COMPENSATION

Director/vice president of e-commerce/business	9.3%
Network architect	5.3%
Web developer	4.8%
CEO	4.5%
Storage architect/engineer/administrator	4.5%

BIGGEST LOSERS

TITLES THAT SAW LOWER-THAN-AVERAGE GAINS IN TOTAL COMPENSATION

E-commerce specialist	1.7%
E-commerce manager	1.5%
Technician	1.3%
Network manager	1.0%
Technical trainer	1.0%



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By the Numbers

THE HEART OF THE MATTER

WHERE DO YOU EXPECT TO BE IN YOUR CAREER FIVE YEARS FROM NOW?

Promoted to a higher-level position 21%
At the same job in the same company 45%
Self-employed 16%
Retired 7%
In a job outside the IT profession 8%
At a similar job in a different company

THE TOP SEVEN CHALLENGES FACING WORKERS IN THE IT INDUSTRY TODAY

- 1 Alignment of IT with the business 23%
- 2 Keeping up with technology advancements 20%
- 3 Outsourcing 18%
- 4 Job security 16%
- 5 Gap between skills required and training available 9%
- 6 IT talent shortage 9%
- 7 The economy 9%

SOURCE: SALARY SURVEY
NOTE: MULTIPLE RESPONSES ALLOWED

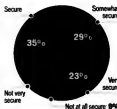
WHAT MATTERS MOST TO YOU ABOUT YOUR JOB?

- Base pay 71%
- Benefits 53%
- Vacation time/length of time off 53%
- Challenge of job/variety 50%
- Flexible work schedule/telecommuting/works at home 54%
- Potential for career advancement and development 28%
- Job stability 28%
- Skill development/educational training opportunities 25%
- Job atmosphere/community 20%
- My opinion and knowledge is valued 18%
- Bonus opportunities 15%
- Financial stability of company 14%
- Recognition for work well done 12%
- Corporate culture and values 12%
- Having the resources to do my job well 12%
- Commute/distance/location 11%
- Effectiveness of immediate supervision 9%
- Working with highly talented peers 9%
- Work with leading edge technology 8%
- Corporate commitment to and understanding of the importance of IT 7%
- Stock options 5%
- How my work helps achieve company goals 5%
- Company reputation 5%

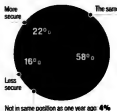
NOTE: MULTIPLE RESPONSES ALLOWED

JOB SECURITY

HOW SECURE DO YOU FEEL IN YOUR CURRENT POSITION?



HOW SECURE DO YOU FEEL COMPARED WITH ONE YEAR AGO?



IN TEXAS, I'M THE ONLY NETWORK ARCHITECT (FOR THE COMPANY).

MIKE WYCK, EXPLAINING THE 10% RISE THAT BROUGHT HIM UP TO PAR WITH NETWORK ARCHITECTS AT EX PERMAN'S CALIFORNIA HEADQUARTERS

Continued from page 42
to enhancing Web-based products and services, Foote says.

Dennis Byford, a network architect at Integris Health Inc. in Oklahoma City, has seen his personal stock rise as more IT projects involve the Web. "All of our projects right now are tied into electronic medical records and physician order entry systems," he says.

Squaring Up

At raise time, Jennifer, a wireless network engineer at a hospital system in Florida, knew what her skills were worth. Unfortunately, her employer didn't. So she balked when the hospital offered her a 7% pay increase this year. "Some executives don't understand what an impact wireless has in the

enterprise," says Jennifer, who asked that her full name not be used. She has three years' experience managing a 100-access-point wireless infrastructure and has earned Cisco Systems Inc.'s CCNP and CCIE certifications.

"I'm in charge of their entire wireless network, and it's growing faster than [the current infrastructure] can possibly accommodate," she says. "I'm trying to get them to understand the value of what I do. I really don't think that they get it."

Executives eventually saw the light and gave Jennifer a 7.75% raise. "But I'm still a little underpaid," she adds. In fact, Jennifer is one of the lucky ones — other wireless network engineers and network engineers in this year's survey received pay raises that were a

bit lower than average, at just 2.7%.

Overall, Computerworld's Salary Survey and other studies point to a firming labor market. Some 41% of IT executives who responded to Computerworld's second-quarter Vital Signs Survey said they found it more difficult to recruit key IT talent than they did at the same time last year. Sixteen percent of the respondents to this year's Salary Survey said they expect to be in a similar job but at a different company within the next five years, and nearly half (47%) reported that they're actively or passively looking for another job.

Similarly, according to an August 2006 online survey of 1,000 IT workers by the Computing Technology Industry Association, 60% of IT professionals are hunting for a new job. Of those

job hunters, 27% said they're actively searching, 52% said they're "somewhat actively" looking, and 20% said they're "not very actively" hunting for new work. Three quarters of respondents said they wanted better pay.

Here's another sign that employers are reacting to a tightening labor pool for certain specialties: Research by Robert Half Technology shows that average starting salaries are expected to climb 3% this year, with greater increases for positions like IT auditor (11.2%), lead application developer (5.3%) and network security administrator (5.2%). Indeed, dark clouds are looming over employers of people with these specialized skills.

"We have headhunters calling all the time," says Jennifer.

Continued on page 46



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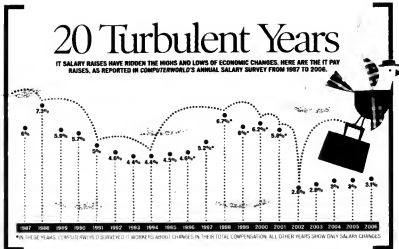
time" for IT workers with network and Web skills. Byford says. Fortunately for Intergrics, he is happy to sit put for now. But other companies aren't as lucky.

On the Market

Job-hopping, a career strategy that tumbled with the dot-com bust, is showing signs of a comeback. Matthew Castello, a Web developer and administrator at the University of Houston, has already seen private-sector companies poach employees with Web skills from his staff. The 12-person Web technologies group has lost two people "just because they can make more elsewhere," Castello says. "Especially in a state institution where salaries are fixed, it's hard for us to compete."

Foote calls it a battle for specialized skills. "There have always been talent wars in specific jobs, but has never changed. The difference today is it's new, down to this number level," Foote says. For these in-demand skills, companies are willing to pay "skills premiums" in the form of signing bonuses or retention bonuses.

C++ programmers are earning 2% to 10% or more pay, according to Foote. Partners research. Certified WebSphere skills can nab 12% to 14% in bonus pay. CWNIP in excess certifications from Planet3 Wireless Inc. can earn employees 8% to 12% more. Cisco certification as an advanced wireless LAN design specialist translates to a 7% to 10% increase in salary. Foote's study also found that skills premiums were similar for both certified and noncertified employees in these areas.



That creates problems for public-sector IT departments that can't pay extra for special skills. All IT workers at the California Department of Technology Services got a 3.5% pay raise this year, but Internet services manager David Kiss has a hard time competing with the private sector for candidates who have any kind of specialized skills. "If I train my people, then I'm at risk of losing them to higher salaries in the private sector," he says.

But all this extra pay could weaken havoc on a company's compensation practices, Foote warns. "What they're doing now is the worst of all worlds. IT is saying, 'I'm going to give this person any title they want and ignore the HR department's compensation guidelines for that position.' That's messy," he says, because it creates overinflated pay scales down the road.

The best way to capture candidates with hot skills is to pay extra through

a signing bonus or a retention bonus, Footo recommends. "and give them an informal job title that will differentiate the employee because we believe this skill is more valuable than others."

Collett is a Computerworld contributing writer. Contact her at acollett@com.com.

CHARTS

For compensation information for 20 IT job titles, turn to PAGE 52.

TOTAL COMPENSATION BY REGION

New England: Maine, Vermont, New Hampshire, Massachusetts, Connecticut, Rhode Island, Pennsylvania

Middle Atlantic: New York, New Jersey, Pennsylvania

South Atlantic: Delaware, District of Columbia, Maryland, Virginia, West Virginia, North Carolina, South Carolina, Georgia, Florida, Puerto Rico, U.S. Virgin Islands

North Central: Wisconsin, Michigan, Illinois, Indiana, Ohio, North Dakota, South Dakota, Minnesota, Nebraska, Iowa, Kansas, Missouri

South Central: Kentucky, Tennessee, Mississippi, Alabama, Oklahoma, Arkansas, Louisiana, Texas

Mountain: Idaho, Montana, Wyoming, Nevada, Utah, Colorado, Arizona, New Mexico

Pacific: Alaska, Washington, Oregon, California, Hawaii, Guam

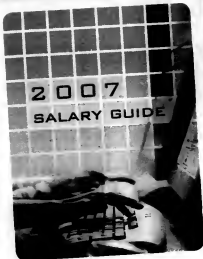
CIO/Vice president of IT
Director of IT operations
IT manager
Project manager
Technology/business systems analyst
Programmer/analyst
Help desk/tech support specialist
Systems administrator
Database administrator
Software engineer
Database administrator
Network administrator
Senior systems analyst
Systems architect
Software developer
Systems analyst
Programming/application development manager

BLUE TEXT: The total base for this job title in this particular region was lower than 20 respondents or more than 15. These figures should be used for comparison only, because they don't constitute a statistically significant sampling.

	NEW ENGLAND	MIDDLE ATLANTIC	SOUTH ATLANTIC	NORTH CENTRAL	SOUTH CENTRAL	MOUNTAIN	PACIFIC
CIO/Vice president of IT	\$176,342	\$168,667	\$177,366	\$184,512	\$184,816	\$187,498	\$185,524
Director of IT operations	\$159,636	\$158,899	\$162,674	\$166,796	\$162,857	\$162,796	\$169,686
IT manager	\$136,867	\$136,678	\$137,815	\$138,672	\$132,549	\$135,055	\$138,899
Project manager	\$118,358	\$118,540	\$120,914	\$120,091	\$116,233	\$118,048	\$120,091
Technology/business systems analyst	\$106,425	\$106,896	\$107,665	\$107,219	\$104,819	\$106,576	\$104,214
Programmer/analyst	\$73,982	\$73,765	\$74,994	\$75,051	\$73,259	\$75,823	\$74,540
Help desk/tech support specialist	\$54,444	\$54,875	\$54,887	\$54,239	\$48,447	\$48,346	\$57,339
Systems administrator	\$68,392	\$68,314	\$68,729	\$68,696	\$62,997	\$70,444	\$73,990
Database administrator	\$88,724	\$88,896	\$89,399	\$88,257	\$82,442	\$86,836	\$86,275
Software engineer	\$84,864	\$86,871	\$86,579	\$76,254	\$82,575	\$86,571	\$86,457
Database administrator	\$63,005	\$67,868	\$68,791	\$61,884	\$65,723	\$68,896	\$66,367
Senior systems analyst	\$84,864	\$86,871	\$86,579	\$76,254	\$82,575	\$86,571	\$86,457
Systems architect	\$104,345	\$105,541	\$107,804	\$108,225	\$104,819	\$105,015	\$110,277
Software developer	\$68,015	\$68,699	\$68,848	\$74,954	\$68,728	\$77,183	\$80,956
Systems analyst	\$75,362	\$73,432	\$76,941	\$67,899	\$68,614	\$65,906	\$69,199
Programming/application development manager	\$118,899*	\$118,354	\$118,737	\$112,168	\$110,237	\$110,277	\$118,334

*The total base for this job title in this particular region was lower than 10 respondents or more than 15. These figures should be used for comparison only.

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GENDER GAP:

Women's Paychecks Still Lag Men's



LAW FIRM IT director Patti Henderson says it's an open secret among a group of her professional peers in Boise, Idaho: Men working in the same IT positions freely admit that they make more money at the same jobs. For Henderson, her predecessor at law firm Givens Purday LLP earned 52% more as director of IT.

"He came right out and said it. The reason is that he knew the firm and the way things ran better [than I did], and I would have to build up to [his salary level]," she recalls. It took her five years in the IT director's position to make as much as he had made a half-decade earlier.

The gender gap in compensation

remains striking, according to Computerworld's 20th annual Salary Survey. A male director of IT makes \$114,045 on average, while a female with that title makes \$106,446, according to the survey. The gap between men and women widens to nearly \$10,000 with the title of CIO or vice president of IT.

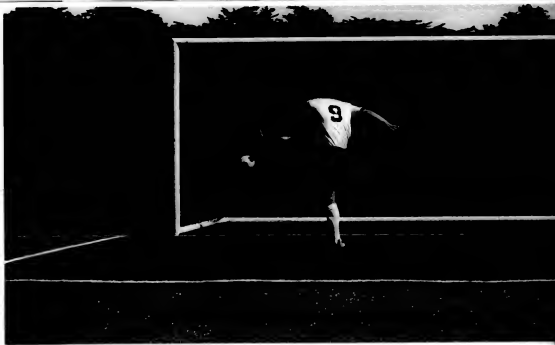
Across the board, total IT compensation averaged \$91,464 for men and \$80,781 for women. These figures are similar to those from the U.S. Bureau of Labor Statistics, which reported that in 2005, women's usual median weekly earnings were 81% of men's. And although that pay disparity isn't for IT workers alone, the industry does have its own challenges.

"The numbers are symbolic of the obstacles and roadblocks that IT organizations have put up [for women] that are sending women away to doctors," says Portland, Ore. analyst Diana Morillo, who in October presented a research study called "Men and Women in IT: Breaking through Sexual Stereotypes."

Morillo says IT departments should look beyond gender to the unique and vital characteristics that women bring to a high-performance team. She says research shows that women listen better than men, possess better language skills and score better on assessments of social skills and ability to understand other people's views, which aids in team-building and negotiations.

Still, these revelations haven't helped boost salaries for some women in IT. Jennifer, a wireless network engineer in Florida who asked to remain anonymous, is relieved that the disparity between her paycheck and those of her male counterparts is only \$5,000. At her last job, the pay difference was nearly \$20,000.

"Naturally, I thought about submitting my



résumé with only a first initial. But when they get me on the phone, I can't exactly hide that I'm a female," she says.

Jen, a manager of Internet services at a nonprofit organization who also noted that her full name not be used, knows she's paid less than the men in her group. "There's a probably a \$15,000 difference" in pay, she says. "But at this point, I'd be crazy to leave. I'm too close to retirement."

Morille offers these words of advice: "If I were a woman trying to advance, I would look at companies that have more global business and put myself in positions for greater learning and global projects. Also, I would be asking if I have the right kind of mentors — those who are tapped into leadership-based advancement and the people who have high credibility," many of whom happen to be men.

If these stereotypes aren't eliminated, Morille cautions that 40% of women will leave the IT workforce by 2012. And if that happens, she says, suddenly "your IT skills crisis is 50% worse than you think."

— STACY COLLETT

By the Numbers

SALARIES FOR WOMEN STILL TRAIL

MALE IT WORKERS

\$91,464

AVERAGE 2000 TOTAL COMPENSATION

UP FROM LAST YEAR

FEMALE IT WORKERS

\$80,781

AVERAGE 2000 TOTAL COMPENSATION

UP FROM LAST YEAR

BRIGHTER NEWS FOR DOMESTICS

Although they earned less overall among overall, health IT workers reported a slightly higher percentage increase in bonuses this year.

MALE IT WORKERS

\$8,437

AVERAGE 2000 BONUS

UP FROM LAST YEAR

FEMALE IT WORKERS

\$5,936

AVERAGE 2000 BONUS

UP FROM LAST YEAR

SOURCE: BUREAU OF ECONOMIC ANALYSIS

SAME JOB, DIFFERENT PAY

A sampling of common titles and the earning power of men vs. women.

CFO	\$79,293	PROJECT MANAGER	\$66,846
MALE		MALE	
BASE: \$50		BASE: \$50	
FEMALE	\$162,826	FEMALE	\$88,000
BASE: 45		BASE: 37	
IT MANAGER		HELP DESK MANAGER	
MALE	\$68,282	MALE	\$77,931
BASE: 1200		BASE: 104	
FEMALE	\$82,137	FEMALE	\$71,682
BASE: 210		BASE: 32	
DIRECTOR OF IT		PROGRAM MANAGER/ANALYST	
MALE	\$114,045	MALE	\$69,782
BASE: 675		BASE: 510	
FEMALE	\$108,446	FEMALE	\$63,558
BASE: 140		BASE: 144	



By the
Numbers**MONEY TRUMPS ALL****WHICH FACTORS WOULD MOST INFLUENCE YOU TO CHANGE YOUR JOB?**

1 Salary increase	82%
2 Better work/life balance	46%
3 More vacation time	36%
4 Large signing bonus	36%
5 Access to new technology projects	35%
6 More responsibility	32%
7 More training	28%
8 New title	17%
9 Relocation	16%
10 Complete career change	16%
11 Paid moving expenses	15%

NOTE: MULTIPLE RESPONSES ALLOWED.

43% SAID THEY WOULDN'T CONSIDER SWITCHING TO A JOB WITH LOWER COMPENSATION.

OF THOSE WHO WOULD, HERE ARE THE TOP FIVE ENTICEMENTS:

1 Better work/life balance	46%
2 More job satisfaction	40%
3 Location	36%
4 Flexibility	32%
5 Stock options	28%

PAUL OLEN

Commitment Phobia

Courtship and marriage the second time around are different from first relationships. The period of adjustment after divorce demands introspection, and survivors typically emerge with new ideas about themselves, others and the nature of relationships.

The specific challenge for those contemplating second marriages is making the decision to commit again. Oddly enough, the numbers from *Computerworld's* 2006 Salary Survey lead me to think that IT workers and corporate America are in a similar situation. They're toying with the idea of committing again after being burned once. They seem to recognize that they need one another, but they aren't certain that they're ready to trust again. IT workers fear they'll be tossed out with the next economic dip, and their employers fear that an expensive talent war may be on the horizon.

Everyone involved seems to be in the throes of major commitment phobia. I'm not going to suggest that there aren't good reasons on both sides, but it seems a rather unfortunate state of existence, especially during a period characterized by such a good business climate. Corporate profits are up. The stock market has risen to pre-bust levels, and despite spiking energy prices, inflation seems generally under control. The U.S. Federal Reserve has even stopped raising interest rates (for now). This is the economic equivalent of springtime in Paris. If workers and managers can't learn to trust again here and now, will they ever?

A few key findings from this year's survey fill out the picture that I see every day in my travels as a consultant. First, consider the near-flat salary numbers. Despite



megaprofits in some industries, the purse strings are still being held tightly.

Second, and more important, the increasing use of one-time compensation tools, such as signing bonuses and annual bonuses, rather than more permanent commitments to salary are signs of failure to commit. Finally, the number of staffers saying that if they are passively, if not actively, looking for new jobs, signals that this isn't just a one-sided fear.

So in this environment, companies commit only in special cases, accepting the necessity of capturing rare talent. And even then, they don't want to overpromise. No one wants the long-term pension liabilities of GM or United Air Lines, living with the consequences of promises that might be impossible to keep.

And staffers no longer believe in the grand missions of their corporations. They dismiss with an eye roll the obnoxious statement that "people are our most important asset." No one treats their most valuable assets like they've been treated over the past five years.

Managers are expected to have one eye on the income statement and the other on the stock price. Employees have one eye on their work and the other on the help-wanted ads. There are no eyes left for each other.

Perhaps I'm just pining for something that never was or never should have been. But it seemed like work was more exciting and fun when employers and employees believed in something more than unvarnished self-interest.

Will we dare to trust again? Stay tuned. Despite fears of being more vulnerable, both sides know that amazing creativity and productivity happen only when there's at least a hint of that old-fashioned loyalty — and trust. ■

COMPANIES COMMIT ONLY IN SPECIAL CASES, ACCEPTING THE NECESSITY OF CAPTURING RARE TALENT, AND EVEN THEN, THEY DON'T WANT TO OVERPROMISE. NO ONE WANTS THE LONG-TERM PENSION LIABILITIES OF GM OR UNITED AIR LINES.

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COMPUTERWORLD
SALARY
SURVEY
2006

SENIOR MANAGEMENT POSITIONS

[illegible]

AVERAGE TOTAL COMPENSATION BY INDUSTRY

[illegible]

- AVERAGE TOTAL COMPENSATION BY COMPANY REVENUE -

Large Room \$2550 \$540,572 1000 sq. ft.	Large Room \$2550 \$529,000 1000 sq. ft.	Large Room \$2570 \$555,300 1000 sq. ft.	Large Room \$2550 \$540,500 1000 sq. ft.	Large Room \$2550 \$533,000 1000 sq. ft.
Medium Room \$2050 \$420,000 800 sq. ft.	Medium Room \$2050 \$374,570 800 sq. ft.	Medium Room \$2050 \$410,000 800 sq. ft.	Medium Room \$2050 \$380,000 800 sq. ft.	Medium Room \$2050 \$371,000 800 sq. ft.
Small Room \$1550 \$257,000 600 sq. ft.	Small Room \$1550 \$230,100 600 sq. ft.	Small Room \$1550 \$270,000 600 sq. ft.	Small Room \$1550 \$260,000 600 sq. ft.	Small Room \$1550 \$259,000 600 sq. ft.
Mini Room \$1050 \$172,340 400 sq. ft.	Mini Room \$1050 \$164,770 400 sq. ft.	Mini Room \$1050 \$160,000 400 sq. ft.	Mini Room \$1050 \$170,000 400 sq. ft.	Mini Room \$1050 \$160,000 400 sq. ft.

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Gray text: The total base for this job title in this particular industry or company was lower than 30 responses but not less than 25. These figures should be used for reference only, because they don't constitute a statistically significant sample.

MIDDLE MANAGEMENT POSITIONS

Computer operations manager	Help desk/ tech support manager	Information security manager	IT manager
3.0%	2.7%	4.4%	2.7%
Average salary \$74,587	Average salary \$70,098	Average salary \$84,086	Average salary \$74,436
Range \$6,571	Range \$7,888	Range \$42,598	Range \$6,576
Total \$61,586	Total \$77,498	Total \$104,488	Total \$68,767
2006 \$70,462	2006 \$70,382	2006 \$104,078	2006 \$69,485

*** AVERAGE TOTAL COMPENSATION BY INDUSTRY

Electricity \$62,700	Business Insurance (Commercial) \$63,794	Banking \$114,822	Mortgages (Commercial) \$24,676
Government \$78,969	Life Insurance \$61,681	Government \$36,323	Education \$60,870
Manufacturing (Commercial) \$34,896	Leasehold Improvements and outfit \$67,267	Manufacturing (Commercial) \$115,497	Transportation \$60,867
Health care \$79,839	Manufacturing (Commercial) \$60,031	Construction/Building (Commercial) \$69,779	Health care \$61,298
	Retail stores \$71,827	Financial Services \$69,859	Other \$169,062
	Government \$68,484	Communications \$62,800	Banking \$44,946
	Health care \$60,936	Health care \$60,800	Leasehold Improvements and outfit \$60,238
	Financial Services \$68,414		Financial Services \$61,689

*** AVERAGE TOTAL COMPENSATION BY COMPANY REVENUE ***

Less than \$100M \$95,288	Less than \$100M \$95,388	Less than \$100M \$95,444	Less than \$100M \$95,584
\$100M to \$999.9M \$67,967	\$100M to \$999.9M \$70,996	\$100M to \$999.9M \$67,017	\$100M to \$999.9M \$95,991
\$1B to \$10B \$82,388	\$1B to \$10B \$94,391	\$1B to \$10B \$167,982	\$1B to \$10B \$168,842
More than \$10B \$101,011	More than \$10B \$104,967	More than \$10B \$128,828	More than \$10B \$191,991

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By the Numbers

NOTES

LARGEST INCREASES IN TOTAL COMPENSATION, BY INDUSTRY:

Mining, agriculture, construction and engineering	4.9%
Defense/aerospace	4%
Food and beverage	2.9%
Business services/consulting (noncomputer)	2.9%
Other	2.7%

A SAMPLING OF OTHER JOB TITLES

Chief security officer	Director of commerce	Communications manager	Database manager	Data warehousing manager	E-commerce manager	Internet network manager	Business intelligence analyst
5.7%	5.5%	2%	3.4%	4.2%	12%	4.4%	3.6%
Revenue: \$77,000,000	Revenue: \$24,000,000	Revenue: \$2,400,000	Revenue: \$3,400,000	Revenue: \$3,400,000	Revenue: \$12,000,000	Revenue: \$4,400,000	Revenue: \$3,600,000
Costs: \$23,700,000	Costs: \$6,900,000	Costs: \$480,000	Costs: \$1,156,000	Costs: \$1,428,000	Costs: \$4,992,000	Costs: \$1,556,000	Costs: \$1,296,000
Profit: \$53,300,000	Profit: \$17,100,000	Profit: \$1,920,000	Profit: \$2,244,000	Profit: \$1,972,000	Profit: \$7,008,000	Profit: \$2,844,000	Profit: \$2,304,000
2005 total	2005 total	2005 total	2005 total	2005 total	2005 total	2005 total	2005 total
\$148,058	\$143,062	\$28,381	\$33,845	\$117,795	\$107,891	\$83,577	\$73,421

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Ahead of the Curve: Optimizing Application and Business Performance

8:00am to 8:30am

Registration and Networking Breakfast

8:30am to 8:40am

Introduction and Overview

Ron Milton, Executive Vice President, Computerworld

8:40am to 9:20am

Market Overview and Trends

Michael Hugos, Former CIO and Author of *Essentials of Supply Chain Management* and *Building the Real Time Enterprise: An Executive Briefing*

9:20am to 10:00am

Application Performance at Broadcom Corporation: An End-User Case Study

Ken Vennet, Senior Vice President and Chief Information Officer, Broadcom Corporation

10:00am to 10:15am

Refreshment and Networking Break

10:15am to 10:50am

Application Performance Assurance Case Studies: It Pays to be Predictable

Andrew Hittle, Vice President, Quality Assurance Solutions, Compuware

10:50am to 11:25am

Application Performance: An End-User Case Study

Kenneth Speller, Director of Quality Assurance, Chicago Board of Trade

11:25am to Noon

Panel Discussion

Moderator: Ron Milton, Executive Vice President, Computerworld

Panelists: Michael Hugos, Former CIO and Author of *Essentials of Supply Chain Management* and *Building the Real Time Enterprise: An Executive Briefing*; Andrew Hittle, Vice President, Quality Assurance Solutions, Compuware; Ken Vennet, Senior Vice President and Chief Information Officer, Broadcom Corporation; Kenneth Speller, Director of Quality Assurance, Chicago Board of Trade

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MIDDLE MANAGEMENT POSITIONS

Network manager	Product manager	Application development manager	Project manager
14%	2.5%	3.3%	2.8%
Average salary \$74,400	Average salary \$60,000	Average salary \$60,000	Average salary \$60,700
Range \$6,500	Range \$10,500	Range \$8,500	Range \$7,222
Total \$77,900	Total \$70,500	Total \$68,500	Total \$67,922
2005 total \$75,814	2005 total \$64,429	2005 total \$62,539	2005 total \$64,370

++ AVERAGE TOTAL COMPENSATION BY INDUSTRY

Electric \$84,395	Service/repairing (computer) \$91,482	Service/repairing (computer) \$92,370	Service/repairing (computer) \$97,536
Manufacturing (computer) \$85,504	Manufacturing (computer) \$113,276	Manufacturing (computer) \$107,805	Government (computer) \$107,805
Health care \$79,034	Health care \$106,394*	Government \$98,882	Health care \$90,700
Health care \$67,894		Finance/insurance \$106,808	Finance/insurance \$100,989
Legal/financial and estate \$67,879*	Legal/financial and estate \$127,808	Health care \$82,036	Manufacturing (computer) \$100,762
Manufacturing \$67,834*		Health care \$82,036	Legal/financial and estate \$95,376
Service/repairing (computer) \$64,462*		Legal/financial and estate \$101,017	Health care \$95,336
		Education \$96,370	Finance/insurance \$96,367

AVERAGE TOTAL COMPENSATION BY COMPANY REVENUE

Less Than \$300M \$98,866	Less Than \$300M \$82,068	Less Than \$300M \$96,745	Less Than \$300M \$84,274
\$300M to \$500M \$76,860	\$300M to \$500M \$102,439	\$300M to \$500M \$98,724	\$300M to \$500M \$91,067
\$50 to \$100 \$113,957	\$50 to \$100 \$367,768	\$50 to \$100 \$113,820	\$50 to \$100 \$101,431
More Than \$100 \$82,432	More Than \$100 \$196,367	More Than \$100 \$121,352	More Than \$100 \$106,807

^a Average percentage increase, 2005–2008.

Gray text: The total base for this job title in this particular industry or company size was fewer than 30 responses but more than 15. These figures should be used for comparison only because they don't constitute a statistically significant sampling.

STAFF AND ENTRY-LEVEL POSITIONS

[illegible]

• AVERAGE TOTAL COMPENSATION BY INDUSTRY:

[illegible]

AVERAGE TOTAL COMPENSATION BY COMPANY REVENUE

* The total base for this job life in the particular industry or company size was lower than 10.

By the Numbers

COLD INDUSTRIES

SMALLEST INCREASES IN TOTAL COMPENSATION, BY INDUSTRY:

Computer design/printer	-1.5%
Automotive	1.9%
Government	2.2%
Wholesale trade	2.5%
Education	2.7%
Health	2.7%

A SAMPLING OF OTHER JOB TITLES

Database management middleware	E-commerce specialist	Marketing specialist	Network architect	Storage administrator/ architect/engineer	Quality assurance specialist	Technical trainer	Webmaster
2.6%	11%	2.2%	5.3%	4%	3.2%	1.9%	3.4%
Personnel \$68,421	Personnel \$68,796	Personnel \$78,288	Personnel \$97,767	Personnel \$68,867	Personnel \$68,776	Personnel \$62,816	Personnel \$84,886
Person \$4,367	Person \$3,361	Person \$4,576	Person \$6,566	Person \$6,771	Person \$4,524	Person \$3,216	Person \$1,966
Total \$72,788	Total \$72,156	Total \$77,717	Total \$104,332	Total \$75,638	Total \$73,300	Total \$66,032	Total \$86,852
Person %	Person %	Person %	Person %	Person %	Person %	Person %	Person %
2002 total \$70,561	2002 total \$71,595	2002 total \$76,011	2002 total \$92,860	2002 total \$68,886	2002 total \$67,707	2002 total \$65,464	2002 total \$85,429

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COMPUTERWORLD

SALARY SURVEY

2006

STAFF AND ENTRY LEVEL POSITIONS									
Project leader	Software developer	Software engineer	Systems administrator	Systems architect	Systems programmer	Systems analyst	Senior systems analyst	Business analyst	Web developer
2.4%	3.1%	2.6%	3.9%	2.3%	2.1%	3.8%	2.6%	1.3%	4.8%
2005 total \$69,891	2005 total \$76,869	2005 total \$62,576	2005 total \$64,891	2005 total \$67,096	2005 total \$64,571	2005 total \$66,579	2005 total \$64,270	2005 total \$47,217	2005 total \$66,869

AVERAGE TOTAL COMPENSATION BY INDUSTRY

AVERAGE TOTAL COMPENSATION BY COMPANY REVENUE

*No average percentage increase, 2005-2006

†Firm size: The total base for this job title in this particular industry or company size was lower than 30 responses but more than 15. These figures should be used for comparison only, because they don't constitute a statistically significant sampling.

‡The total base for this job title in this particular industry or company size was lower than 10 responses but more than nine. These figures should be used for comparison only.

Methodology

Computerworld's 20th Annual Salary Survey was administered via the Internet. Responses from both Computerworld print subscribers and visitors to Computerworld.com were included in the survey results.

The collection of survey data began May 5 and concluded July 14, 2006. A total of 16,866

people responded to the survey. Of these respondents, 14,740 were employed full or part time and were eligible to complete the entire survey. At the 95% confidence level, the margin of error for this sample size is less than +/-1 percentage point.

Respondents were asked to report the per-

centage change in their compensation from 2005 to 2006. Compensation figures for 2005 were calculated based on the percentage change reported by the respondents.

WHO THEY ARE

SEVENTY-THREE percent of our respondents were men, 22% were employed full time, and 47% said a bachelor's degree was their highest level of education. Respondents had an average of 10 years in IT, and their average age was 40. Forty-eight percent indicated that they had some level of computer certification. The companies they work for employ an average of 8,000 total employees

and an average of \$67.17 million. The average 2006 revenue of their companies is \$2.0 billion. Thirty-eight percent work for public companies, while 50% work for private companies; 10% work in education, 10% in government and 7% for nonprofits.

Eighty-four percent reported that they held the same job last year. Forty-five percent of our respondents indicated that they were in management, and 10% said they held staff or technical positions.

The most well-represented industry in the sample was IT services, with 16% saying they worked in that field. Nineteen percent reported being in the South Atlantic region of the country, and another 19% reported being in the North Central region, making these geographic areas the best represented. Four percent said they were employed as contractors or consultants.

Pay rates for contractors and consultants can be found at www.computerworld.com/directory.



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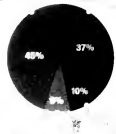
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JOHANNA ROTHMAN

A Slow Thaw



WHICH ONE OF THE FOLLOWING BEST DESCRIBES YOUR JOB SEARCH STATUS?



TOP FIVE REASONS THEY'RE LEAVING FOR A JOB:

1. Looking for higher compensation
2. Career opportunities
3. Seeking more interesting/challenging work
4. Looking for more personal fulfillment
5. Seeking more responsibility

TOP FIVE REASONS THEY AREN'T LOOKING FOR A JOB:

1. Satisfied with current job responsibilities
2. Satisfied with current compensation
3. Satisfied with company culture
4. Job market is poor/ few opportunities
5. Other

NOTE

THIS YEAR, it's clear that the economy has changed. Computerworld's 2008 Salary Survey shows that fewer people are seeing their pay decline. Some are getting raises. The overall change in base salary is flat. The frozen job market is starting to melt, giving less advantage to employers and more to employees.

So what does that mean for both sides? Look at the numbers: 47% of all the IT workers who responded to the survey said that they're either actively or passively looking for another job. That could create a huge movement in jobs in the industry in the coming year or so. And 29% of those job-seeking respondents are looking for more responsibility. That's a big number. Remember, the cost of replacing an employee can be as much as the employee's salary for one year. At a minimum, it's a few months of his salary.

Managers, here's some free advice: Ask your staff in one-on-one meetings if they're happy with their response. If not, determine if there's a way to make the work more palatable or even change people's responsibilities.

Employees, here's your advice: Talk to your manager. He may not realize you're unhappy, especially if he's working in crisis mode and hasn't kept up with your one-on-one meetings.

Another factor in retention is salary and work environment satisfaction. 22% of all respondents said they aren't satisfied with their compensation, and 43% of job-seekers are looking for more interesting and challenging work. I suspect these two are related for many people. An interesting work environment is a combination of what people can discuss, how people are treated and what's rewarded. This means it's even more important for managers to consider how to establish a positive work culture and competitive reward system.

Some of the most important things are free — meaning they



JOHANNA ROTHMAN is president of Rothman Consulting Group Inc., a human capital architecture and strategy consultant. She is author of the new book, *Managing Social Skills: Secrets of Great Management*, and she blogs regularly for Computerworld and other sites. Write her at jr@rothman.com.

don't cost money, not that they don't require your time. Spending time with employees in one-on-ones and building a trusting relationship costs nothing but time. Compared with the cost of replacing an employee, it's cheap.

That said, money still talks. If we look more closely at the data, we see that a staggering 60% of the people looking for new jobs are looking for more money. It's not 1999 yet, but remember, baby boomers are starting to retire, and there are fewer trained people ready to take their place.

Managers, if you think you need more people, start being concerned about where the new folks are going to come from. And start reviewing your salary data. Compare what you pay to what others pay in your area for similar jobs. You may be unpleasantly surprised.

If you are looking to hire people, remember you're offering a career opportunity, not a job. That's good, because that's what people want. They want more interesting and challenging work.

You may have to reorganize how your group does work. That's OK, because your bosses are probably on your case to produce more with the same number of people.

Consider moving to cross-functional, feature-oriented teams for at least some of your product development. A cross-functional team focused on one feature or a related group of features offers people a chance to expand their skills and learn new ones. And all team members become more familiar with that part of the product.

And employees, if you've read the survey and found that your salary isn't stacking up to those of your peers, take this advice: Research what your position pays in a variety of industries and geographical locations and review your accomplishments over the past year so you can start making your case.

It's not a job hunter's market — at least not yet. But if you look at the trends from 2005 to 2006, it's clear that employees feel better about seeking new jobs and aren't afraid to start looking any more.

Managers, remember that retention is your single best recruitment strategy. Build relationships with your team, and consider how you can create more challenges at work.

Employees, remember that your manager is only human. Have a talk with your manager and explain what you want out of work. You might be surprised to discover that you can find it at your current employer.

And if you've decided to look for a new job — have a blast! There are opportunities out there if you're willing to learn new things. ■

ONLINE EXCLUSIVE

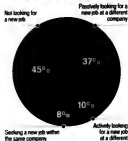
Need more advice about asking for a raise? Submit your question on our Web site, and Johanna Rothman will answer select reader inquiries online all this week. www.computerworld.com/500/salaries

By the Numbers



ON THE LOOKOUT

WHICH ONE OF THE FOLLOWING BEST DESCRIBES YOUR JOB SEARCH STATUS?



TOP FIVE REASONS THEY'RE LOOKING FOR A JOB:

- 1 Looking for higher compensation 63%
- 2 Career opportunities 47%
- 3 Seeking more interesting/challenging work 43%
- 4 Looking for more personal fulfillment 41%
- 5 Seeking more responsibility 29%

TOP FIVE REASONS THEY AREN'T LOOKING FOR A JOB:

- 1 Satisfied with current job responsibilities 70%
- 2 Satisfied with current compensation 50%
- 3 Satisfied with company culture 48%
- 4 Job market is poor/ few opportunities 21%
- 5 Other 17%

NOTE: MULTIPLE RESPONSES ALLOWED.

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You may have to reorganize how your group does work. That's OK, because your bosses are probably on your case to produce more with the same number of people.

Consider moving to cross-functional, feature-oriented teams for at least some of your product development. A cross-functional team focused on one feature or a related group of features offers people a chance to expand their skills and learn new ones. And all team members become more familiar with that part of the product.

And employees, if you're read the survey and found that your salary isn't stacking up to those of your peers, take this advice: Research what your position pays in a variety of industries and geographical locations and review your accomplishments over the past year so you can start making your case.

It's not a job hunter's market — at least not yet. But if you look at the trends from 2005 to 2006, it's clear that employees feel better about seeking new jobs and aren't afraid to start looking anymore.

Managers, remember that retention is your single best recruitment strategy. Build relationships with your team, and consider how you can create more challenges at work.

Employees, remember that your manager is only human. Have a talk with your manager and explain what you want out of work. You might be surprised to discover that you can find it at your current employer.

And if you've decided to look for a new job — have a blast! There are opportunities out there if you're willing to learn new things. ■



JOHANNA ROTHMAN



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FRANK HAYES • FRANKLY SPEAKING

IT's Bitter Pill

SAY you walk into work on Monday morning to find a lengthy e-mail message. It's from a project supervisor. It's addressed to everyone in the company. It says a hugely expensive, mission-critical application is a failure that won't scale, is regularly down and is likely to cost lots of money and maybe even lives. And the message appears to back up those claims with financial, technical and historical detail (see story, page 6).

If you're a CIO, it's the sort of thing that probably gives you a sick feeling in the pit of your stomach.

If you work at Kaiser Permanente, it's what happened last week.

And if you're the CIO at the not-for-profit health care giant, as Clifford Dodd was last Monday, it's the prelude to your departure — Dodd resigned the next day.

Wait, it gets uglier: The Kaiser e-mail message didn't just claim that Kaiser's electronic medical records system, HealthConnect, was a \$3 billion failure. It also claimed that Dodd was a director for the company that had collected a \$1 million consulting fee for recommending the product HealthConnect is based on.

And it claimed that Kaiser CEO George Halvorson had preselected the HealthConnect technology, had ignored an internal Kaiser engineering analysis that accurately predicted it wouldn't work at a health care organization the size of Kaiser, and had run into similar problems with the same technology at his previous job as CEO of a smaller health plan in Minnesota, where the state attorney general eventually issued a report blaming Halvorson for high-level financial waste and abuse.

Is all this true? We don't know for sure. Halvorson insists the project supervisor, 25-year-old Justin Deal, has strung together facts but has the story wrong. Kaiser spokesmen say Dodd's departure had no connection with Deal's e-mail.

But we do know that Deal spent fruitless months going through channels — exchanging letters with Kaiser's chief compliance officer, members of Kaiser's board, Kaiser lawyers and California government officials — before sending his message to 180,000 Kaiser employees last week. Deal has published those letters and responses on a Web site, FixK&P.org.

Deal is now on administrative leave. Dodd is gone. Halvorson is working to limit the PR damage.

Yes, it's a mess. How it will play out in the weeks and months to come remains unknown.

But here's something to think about, something more than a little worrisome: Halvorson, Dodd and Deal are supposed to be exactly the kind of people that IT is pinning its future on.

Here's a tech-savvy CEO who takes an active interest in major IT projects, who in fact believes that IT is key to business transformation.

Here's a CEO who's a trusted adviser to the CEO, one who can deal with both technical and business barriers to a major project's success. And here's a young, aggressive, business-savvy IT worker who sees the big picture, understands corporate politics and isn't afraid to look beyond his cubicle walls to get things done.

How many times have you heard pundits (yes, me too) tell you that we need CEOs, CIOs and IT staffers like these? That without them, IT can't gain the insight and the clout it needs to use technology for solving business problems? That these are the people who can win real business value from IT?

Instead, these people have brought Kaiser what appear to be sweetheart deals, cover-ups and damaging publicity — and that's without

yet knowing whether a failed electronic health records system really has caused Kaiser serious financial losses and put patients at risk.

For the record, I still believe IT needs people with these qualities. Not these people, maybe, and certainly not these results. Still, tech-savvy CEOs, tight-with-the-boss CIOs and business-smart IT people are the future of IT.

But if you think they're the prescription that will cure all your IT ills, think again. At Kaiser, at least, they've turned out to be a very bitter pill to swallow. ■



JUSTIN DEAL, Kaiser Permanente's project supervisor, sent a scathing e-mail last week to 180,000 employees claiming the company's \$3-billion electronic medical records system was a failure.

Good Idea, but Not Quite Right

On-call pilot isn't a paper writer here, but there's no number to call on the paper's screen — just "newsroom." Fish ignores it's a wrong number and goes back to sleep. But for the next five hours, it's the same thing. Finally, he gets a page with a number, and when he dials it, he gets an immediate answer: "Sign in, please." It seems that when the ground crew is over the number to dial, the user was supposed to hear phone number rather than pressing the keypad.

Oh, right?

This message

wasn't even

received until

the system

applications

with two sets of

times at different

times on separate

pages. For a weekend

disaster recovery test,

was also a completely

short down to make

everything will keep

functioning. On Monday,

pilot fish continues his

work suffering about the

fact: "I went really well

— we shut down Site A

and didn't get a single

short from the automatic

monitoring system." "Well,

yes, but that's

because the automatic

monitoring system isn't

replaced, and it's

located at Site A."

Well, it's a mess. How

it will play out in the

weeks and months to

come remains unknown.

But here's something

to think about, something

more than a little worrisome:

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SHARK TANK

any with all he needs to launch his own business. Once

again, what is he

going to do if he calls for the Windows CD during

the test?"

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monitoring system isn't

replaced, and it's

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Been There, Elf?

Engineer at a remote

site makes an emergency

request for a

Windows XP CD so he

can install some features

in his desktop. Support

gives him the

software path to the

download with the file

and when the CD is

second-day delivery

— they get called on

the next day by his boss.

"They did give him the

CD second day instead

of overnight?" he asks.

Yes, he has ordered

again to the store.

Well,

yes, but that's

because the automatic

monitoring system isn't

replaced, and it's

located at Site A."

Well, it's a mess. How

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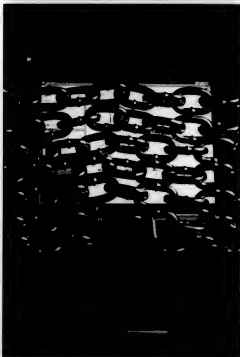
these are the people who

can win real business

value from IT?

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